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STUDENT ACHIEVEMENT IN DEVELOPMENTAL MATHEMATICS AND EFFECTIVE PRACTICES IN DEVELOPMENTAL EDUCATION: A STUDY OF AN URBAN COMMUNITY COLLEGE DISTRICT IN TEXAS

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STUDENT ACHIEVEMENT IN DEVELOPMENTAL MATHEMATICS AND EFFECTIVE PRACTICES IN DEVELOPMENTAL EDUCATION: A STUDY OF AN URBAN COMMUNITY COLLEGE DISTRICT IN TEXAS

by

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Dedication

This work is dedicated to my son, whose love and support provided me with the courage to continue forward. We did it! I love you, infinity and beyond!

To my mother, for her unconditional love and support, and for standing by me every step of the way.

To the memory of my father who passed on his compassion for others and the will to persevere.

To the memory of my nephew who will always remind me the importance of this work.

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Success rates for students in developmental education are dismal. The greatest need for developmental education instruction occurs in mathematics, where high numbers of underprepared students generate great concern and the need for substantial changes in higher education institutions. With higher rates of students requiring remediation in the community colleges, the identification of effective policies and practices in developmental education is necessary to increase the achievement rates of developmental education students, and more specifically developmental mathematics students. This study explored the relationship between developmental mathematics student performance and developmental education programs of the Urban Community College District colleges. In addition, this study set out to identify institutional characteristics between colleges whose developmental mathematics students met state mandated academic outcomes at higher rates than their sister colleges.

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CHAPTER I: INTRODUCTION TO THE STUDY

Introduction

Institutions of higher education are facing the challenge of educating students who enter underprepared for college-level work. As the nation reels from a failing economy and staggering unemployment, colleges and universities are experiencing an influx in student enrollment, with the majority entering community colleges. The need to provide effective developmental education is crucial to providing the educated workforce necessary to maintain a competitive edge in an increasingly global economy. The economic and social benefits are worth the tremendous effort that will be required to improve academic outcomes for students requiring remediation.

Not everyone, however, agrees that developmental education is a critical issue for higher education. Developmental education programs often are considered a financial burden for colleges and universities. In many states, remediation for underprepared students has been assigned to the community colleges. Even in that comparatively low-cost segment of higher education, some still believe that developmental education is too costly, drawing resources that would be better applied elsewhere. On the contrary, the economic and social benefits of effective developmental education are enormous. A paradigm shift is required to move away from the current mentality that the costs of improving remediation are too high or burdensome. The key to improving certificate and degree attainment levels for the largest incoming student group in community colleges is in the improvement of developmental education.

Since the issue of developmental education was brought to the forefront 40 years ago (Roueche, 1968), finding a solution to the puzzle of identifying effective practices to meet the wide range of learning challenges of students found in developmental education has frustrated educators. The determination of effective programs in developmental education programs continues to be a longstanding issue.

Along with expanded access to postsecondary education in the second half of the twentieth century, larger numbers of students have enrolled in community colleges less prepared for college-level work. According to Roueche, Ely, & Roueche (2001), "Higher education, especially the community colleges, witnessed a steady increase in the number of underprepared students, thus warranting additional increases in remedial services" (p. 11). In spite of the importance of developmental education, "[t]here is little evidence that the majority of community colleges have a solid grasp of the extent of the problems, much less have designed and implemented responses that the public and the politics of the day will continue to accept" (Roueche & Roueche, 1999, p. 6). Just as these students come into higher education with varying needs, many colleges continue to use cookie-cutter approaches.

Developmental education in Texas.

Among a flood of underprepared students entering into Texas' colleges and universities, the majority are found in Texas community colleges. Open-admissions, open-access two-year institutions enrolled 60% of first-time-in-college students that were underprepared, as compared to 29% at four year universities for fall 2003 (THECB, 2008). It is important to note that in some urban areas of the state, such as Dallas,

Houston, and San Antonio, these percentages were even higher, in some cases at 90%. Minority groups have a higher risk of not being college ready. For the fall 2003 cohort of Texas students enrolling in postsecondary education, 69% of Hispanic students and 75% of African-American students were underprepared. Whites comprised 51% of the underprepared student enrollment (THECB, 2008).

The purpose of this study was to explore how community colleges within a large urban district address the needs of the underprepared student, and more specifically, students who require one or more levels of developmental mathematics. By exploring student performance on academic outcomes tied to college-readiness and the effort level of colleges to implement effective developmental education practices, this researcher determined that a relationship exist between student performance and developmental education program effectiveness.

Statement of the Problem

There is widespread agreement that developmental education poses a serious challenge for institutions of higher education, but there has been no consensus on how to solve it. Theory and research to guide practitioners in establishing effective programs is limited and mixed in quality. According to McCabe (2000), available research concerning developmental education has shown unrealized promise: "In recent years, some exciting and effective remedial programs have been developed. Nevertheless, the information concerning effective practices has been largely ignored" (p. 44).

In contrast, Merisotis and Phipps (2000) question the rigor of available research stating, "Research about the effectiveness of remedial education programs has been

sporadic, underfunded, and inconclusive" (p. 75). According to Grubb (2001), "Relatively few evaluations of remedial programs have been conducted, and many existing evaluations are useless" (p. 1). What has been agreed upon in the field of developmental education is the need for rigorous research in determining the effectiveness of developmental education programs. Developing a better understanding of the relationship between institutional policies and practices and academic outcomes is an important step in determining effective strategies that influence student success.

Specific Problem Area

The greatest need for students who require developmental education is in mathematics. According to the American Mathematics Association of Two-Year Colleges (AMATYC) (2006), in fall of 2005, approximately 1.3 million students enrolled in mathematics in America's two-year colleges, and of that number, 57% were in developmental mathematics. Of the students enrolled for the first time in Texas community colleges for 2005, 45%, or 44,933 students were underprepared in mathematics (THECB, 2009a). Over a three-year period for this same 2005 cohort, 19.3% attempted a college-level mathematics course. Of that same group, 13.3%, or 5,956 students completed a college-level mathematics course with a grade of C or better over three years (THECB, 2009a).

Purpose of the Study

The purpose of this study was to determine if a relationship exists between student performance in developmental mathematics and the incidence of certain identified effective practices in the developmental education programs in the Urban

Community College District (UCCD) colleges. First, this study set out to examine how students enrolled at the UCCD colleges performed on state standards and academic outcomes that indicate college readiness. Secondly, this study sought to determine how the colleges differ on the implementation of effective practices and the distinguishing characteristics between the developmental education programs in the UCCD colleges. Finally, this study sought to determine if a relationship exists between the academic performance of the UCCD students and the colleges' implementation of identified effective practices in their developmental education programs.

This study was conducted in three phases. Phase I examined student performance on state standards and academic outcomes that indicate college readiness over a three-year period. The cohort groups comprised first-time-in-college (FTIC) students enrolled in four community colleges in the UCCD from fall 2003, 2004, and 2005. The cohort was disaggregated by students who met the state standard and did not meet the state standard.

Phase II set out to examine the differences in effort levels in the implementation of effective practices in developmental education programs at each of the colleges and to identify distinguishing characteristics between the colleges. These data were gathered from survey respondents that have first-hand knowledge of developmental education policies and practices at each of the UCCD colleges.

Phase III set out to determine the existence of a relationship between student performance on academic outcomes and the identified effective practices in developmental education programs at each college within the UCCD. The results discovered in Phase I and Phase II, were critically analyzed for linkages that would

suggest a relationship between student performance and certain identified effective practices in developmental education.

Significance of the Study

Limited research is available linking student outcomes to institutional practices (Bailey, 2006). In addition, studies that utilize outcome data, for the most part, study institutions that are deemed successful but fail to "identify factors that distinguish higher from lower performing colleges" (Bailey, 2006, p. 9). In an effort to expand the knowledge base regarding effective practices in developmental education, this study sets out to examine policies and practices and to identify distinguishing characteristics of community colleges whose developmental mathematics students showed positive progress on academic outcomes.

Research Questions

The following research questions were used to guide this study.

1. To what extent do developmental mathematics students achieve academic success in the UCCD colleges as indicated by performance on academic outcomes?

Sub-questions:

- What proportion of first-time-in-college (FTIC) students met the state standard in mathematics?
- How does this compare with the proportion of FTIC students who fell below the state standard in mathematics?
- What proportion of FTIC students who fell below the state standard in mathematics and attempted developmental mathematics met the Texas Success Initiative (TSI) obligation?

- What proportion of FTIC students who met the TSI obligation in mathematics through developmental education attempted a college-level mathematics course and completed with a grade of A, B, or C as compared to college-ready students?

2. To what extent do the UCCD colleges differ on the level of effort towards implementation of effective practices and what are the distinguishing characteristics between the UCCD developmental education programs?
3. What is the relationship between student performance in developmental mathematics and the incidence of identified effective practices in developmental education programs in the UCCD colleges?

Research hypotheses (alternative and null).

1. A relationship exists between student performance and effective practices in developmental education programs.
2. There is no relationship between student performance and effective practices in developmental education programs.

Definition of Terms

- *College-ready:* A student who met the state standard in all areas (mathematics, reading, and writing). The knowledge and skills expected of students to perform successfully in entry-level courses offered at institutions of higher education.
- *Developmental education*: Researchers define this as coursework provided by colleges and universities that prepares a student to successfully progress into college-level course work.
- *Developmental mathematics:* A non-credit bearing course that is offered at a college or university for preparation into college-level mathematics that

encompasses fundamental mathematics, algebra I, algebra II, geometry, and problem solving.

- *First-time-in-college student:* A first-time credential-seeking student enrolled in a college or university who is not enrolled as a dual credit or flex-entry student.
- *State standard:* The minimum/passing score on all relevant sections of the TAKS, SAT, or ACT tests, or the passing of all three sections of the THEA (Texas Higher Education Assessment) test or an approved alternative test. Students may also be exempt under certain conditions. (See Appendix A and B).
- *Texas Success Initiative (TSI):* Students are required to be assessed in reading, writing, and mathematics prior to enrolling in a college or university. Institutions are granted the discretion to determine course placement based on the academic needs of the students.
- *Texas Success Initiative (TSI) obligation:* A student must meet the Texas Success Initiative minimum passing standard on all three sections of the Texas Higher Education Assessment (THEA), or an approved alternative test (ASSET, ACCUPLACER, or COMPASS). Students who meet the state minimum standard scores have met the TSI obligation and are considered college-ready. (See Appendix B).
- *Underprepared student:* A student who did not meet the state standard in one or more of the following areas: mathematics, reading, and/or writing.

Assumptions

For the purpose of this study, it was assumed that the mission of the community college includes the education of the underprepared student. It was also assumed that each college administers placement tests to determine student proficiency levels in mathematics and that each college follows state policy that mandates the use of state-approved placement tests and minimum placement standards or scores.

Chapter Summary

This chapter provided an overview of the context of this study, including the introduction, statement of the problem, specific problem area, purpose of the study, significance of the study, research questions, a brief explanation of the methodology, the perceived limitations and delimitations to the study, assumptions, and definitions of terms.

The next chapter will begin by laying the groundwork of this study by providing an overview of developmental education and the state of affairs of developmental education in Texas. In addition, the theories of key experts in developmental education will be presented. A review of scholarly literature on institutional policies and practices regarding developmental education including instruction and student services will be presented.

CHAPTER II: REVIEW OF THE LITERATURE

Introduction

Attainment of education beyond a high school diploma leads individuals down the path to prosperity. Unfortunately, for underprepared students who enter college, the path is riddled with pitfalls. These students must first come to terms with the reality that they are not academically prepared to take college-level course work.

Underprepared students who enroll in a college or university do so with high hopes. They knowingly commit their time and fiscal resources to earning a certificate or degree for the opportunity of gaining fruitful employment. Their dreams may go beyond fiscal rewards. Many students aspire to be the first in their families to earn a college degree but for many those dreams will never materialize.

This review of literature surveys relevant research in order to remain "consistent with the nature and purpose of the study" (Northcutt & McCoy, 2004, p. 308). The review provides an overview of developmental education theory and research, as well as the state of developmental education in Texas. Scholarly literature on policies and practices, including institutional, instructional, and student services, is also reviewed. Finally, the organizing theoretical framework behind this study will be discussed.

The Evolution of Developmental Education

Developmental education is one of the biggest educational issues facing American higher education today. Forty years ago, Edmund Gleazer (1968) pointed to the heart of the issue that remains no less a challenge today:

> Community college leaders know that remediation is an inescapable obligation in an institution which has an open-door admissions policy and which invites enrollment of high school graduates and others who can benefit from its programs. (p. 58)

Remedial services have been available since the inception of higher education in the United States. Merisotis and Phipps (2000) cite the provision of remediation in Greek and Latin studies at Harvard College "dating back to the 17th century" (p. 68). The land-grant colleges originating in the 18th century established preparatory programs in reading, writing, and mathematics (Payne & Lyman, 1998). Acceptance of underprepared students was the norm at colleges and universities. For example, in 1907 over half of enrolled students in Harvard, Princeton, Yale, and Columbia did not meet entrance requirements thus forcing the need for developmental courses (Wyatt, 1992).

Historical events greatly influenced the expansion of developmental education programs. Financial support provided by the Servicemen's Readjustment Act of 1944 enabled World War II veterans to seek higher education in mass numbers (Boylan, 1990; McCabe 2000; Payne & Lyman, 2000). Secondly, the Civil Rights Act of 1964 closely followed by the Higher Education Act of 1965, expanded college access for people of color and provided federal grant and loan programs that made college possible for students from less advantaged socioeconomic backgrounds. As people took advantage of open admissions policies and government funding, underprepared students flooded

colleges and universities (Payne & Lyman, 2000; Boylan, 1990). According to Boylan (2002), "As student bodies became more diverse, they included more students who were less prepared academically" (p. 2). Community colleges were at the center of change. According to Roueche et al. (2001), "Higher education, especially the community colleges, witnessed a steady increase in the number of underprepared students, thus warranting additional increases in remedial services" (p. 10).

Open access to postsecondary education continues to trouble the question of college preparedness. As the nation continues to grow more diverse, so do colleges and universities. The faces on college campuses not only reflect diversity of race and ethnicity, but age, socio-economic, and educational differences as well. Race and ethnicity continue to be significant factors in limiting fair opportunity to all groups. According to Lopez (2003), "racism is a normal and endemic component of our social fabric…it is such a common/everyday experience that is often taken for granted" (pp. 83-84). McCabe (2003) implies that the masked racial and ethnic stratification is at the root of America's failure to seek resolution to equality through social and political discourse. Knefelkamp asserts, "In order for higher education to be more effective, we must have an accurate reflection of society represented within higher education" (University of Michigan, 1998, p. 2). Until that happens, higher education will never truly represent the face, thoughts, and idealisms of a just society.

Developmental education is not a new problem, nor has it received the attention it duly requires. Remediation is offered on nearly all campuses across the United States, even in the halls of the Ivy League universities. While stigma-laden jargon often

associated with remedial services or programs is often masked in those elite halls it is apparent in programs frequented by the historically disenfranchised. These programs are often low on the institutional priority list and are repeatedly threatened for elimination during fiscal upheaval.

The need for overhaul in structure and delivery of developmental education, particularly regarding policies and programs viewed as posting a threat to at-risk populations, is widely documented (Roueche, 1968; Roueche & Roueche, 1999; McCabe, 2000; Boylan, 2002). There must be the recognition that large numbers of students entering into higher education are underprepared for college; and strong effective developmental education programs are needed to support the progression of these students through the academic pipeline.

Linking Theory, Research, and Practice

Development education as a distinct field of inquiry evolved from the practical dilemma of helping underprepared students succeed in college. Improved practice, however, has often suffered from absence of a robust body of theory and research related to policy, implementation, and best practices for the field. Higbee, Arendale and Lundell (2005) state, "…there is a critical need to link theory, research, and practice in developmental education" (p. 5). The authors focus on theoretical frameworks that articulated the whole-student development and recommend new areas for research due to "changing demographics, and political realities, ongoing scholarship across educational levels, and improved research protocols and procedures" (p. 11).

The use of theoretical frameworks in the area of developmental education provides legitimacy to the field (Chung, 2005). Theory and research are useful but Chung emphasizes the importance of a practice-oriented approach. According to Chung (2005), "The problem is that 'theory' as it is traditionally conceptualized and produced by researchers is often of little use to practitioners" (p. 4). He also states that developmental education will greatly benefit from practitioners articulating:

> [T]heir personal theories then scrutinize them with the goal of discovering common theoretical strands…the process of taking an inventory as a community of practitioners will help identify 'what we know'…the proposed project will be by practitioners and for practitioners. (2005, p. 10)

Practical applications developed from theory and research are essential in validating the importance of developmental education. Work by developmental education scholars such as Boylan and Roueche have provided practical guides on how to affect change in developmental education policy and programs. Boylan (2002) in collaboration with the Continuous Improvement Network (CQIN) and the National Center for Developmental Education (NCDE) developed a practical guide titled, *What Works: Research-Based Best Practices in Developmental Education* that presents best practices in the field of developmental education. Boylan's "best practices" were determined through survey research and literature reviews. Institutions selected for inclusion exhibited best practices in the areas of organization, administrative, instructional, counseling, advising, and tutoring activities. Key findings of the Boylan study emphasize the importance of making developmental education an institutional priority and integrating it into the college's planning efforts. In addition, the college community must support developmental education (Boylan, 2002). The resulting compilation of "best

practice" strategies is a rich resource on how to develop and improve developmental education programs. According to Boylan (2002), "Developmental education does not work well when it is random, nonsystematic effort carried out by uncoordinated units spread across the institutional flow chart" (p. 7). Developmental education programs are not effective when conducted in isolation.

In *High Stakes, High Performance-Making Remedial Education Work* (1999), Roueche and Roueche reviewed research related to policies and practices, surveyed selected community colleges with reputations of having made positive strides with the underprepared student, and analyzed program descriptions to determine promising efforts. Key recommendations include surveying, examining, and learning from other institutions that have made strong efforts towards improving student success, such as the Community College of Denver (Roueche et al., 1999). Colleges must also look internally to identify strengths and weaknesses, and take action to implement effective practices. The underlying theme is that community colleges must address the impending crisis of underprepared college students by facing the challenge of providing effective developmental education programs and thus lead postsecondary education towards transformational change.

Proponents of developmental education assert that effective practices exist and have made an impact on student achievement. While research regarding effectiveness of developmental education is growing, "there is little research on the variation of effectiveness of remedial education based on student characteristics such as family background, race, or full-time or part-time enrollment status" (Goldrick-Rab, 2007, p.

12). Other studies have shown that developmental education programs do have an impact on improving a students' chance of success (Bettinger & Long, 2005; Kolajo, 2004).

Limited research exists on institutional policies and practices that impact the success of underprepared students. According to Bailey (2006), problems exist in the study of institutional policies and practices in that there is little research "that explicitly measures and tests institutional policies" and recommends "cross-institutional analysis...to analyze the implications for institutional performance of variation in institutional policy and practices" (p. 8). Bailey recommends measuring institutional practices through other direct sources by collecting institutional policy and practice data using surveys and data collection systems

Developmental Education in Texas

Concerns about the growing numbers of underprepared students have strongly influenced state policy in Texas. Steps taken to address developmental education issues include establishment of mandatory testing, development of a statewide college placement exam, and setting minimum placement scores. In spite of these efforts, strong evidence of positive impact of developmental education on statewide student success rates remains elusive. State policy-makers and stakeholders continue to express concerns regarding apparent ineffectiveness of developmental education programs. Their concern, however, has not translated into marked efforts towards changing how colleges and universities do business (LBB, 2007).

A study of Texas higher education institutions conducted by Boylan and Saxon (2006) found that the "the quality of developmental education in Texas colleges and

universities was uneven. Some institutions gave it a priority and put serious effort into doing it well. Other institutions did not consider it a priority and put little effort in doing it well" (p. 23). The authors concluded that institutional culture plays an important role in successful developmental practices stating, "that quality developmental education results from an institutional culture that values developmental education and considers it a priority" (Boylan and Saxon, 2006, p. 23).

Educational attainment and needs.

Growing disparity in academic achievement among subgroups of the U.S. population is a significant cause for concern. According to Lopez (2006), "Current projections indicate shifting demographics will create substantial increases in the population of American youth who historically have been the most poorly served, least economically successful and most underprepared for college level work" (p. 8). Nationwide, minority groups are less likely to attain a college education. The African-American and Latino student population are failing to complete high school and continue into postsecondary education at rates proportional to the Anglo population who are overrepresented at institutions of higher education (Lopez, 2006).

Disparity in success rates among different racial and ethnic groups becomes particularly troubling in light of demographic changes within the nation. Present populations in many states include a "sizable proportion of well-educated workers, but also a large number of residents who are not prepared educationally to participate fully in the social and economic well-being of their state" (Davies, 2006, p. 2). Well-educated and older workers are nearing retirement while a growing number of young adults are not

graduating from high school and moving on to postsecondary education. According to Davies (2006), "a smaller proportion of young adults (ages 25-34), as compared with older adults (age 35-64), have an associate's degree or higher" (p. 3). Sixteen states are experiencing this workforce crisis, including six of the fastest growing: Arizona, California, Colorado, Florida, Nevada, and Texas (NCPPHE, 2006). In Bailey and Morest (2007), Perin and Charron state, "The already challenging task of educating nontraditional students is becoming even more difficult with demographic shifts currently under way in the United States that exist alongside increasing expectations that employees hold college degrees" (p. 155).

The growth of a young and ethnically diverse workforce will further perpetuate economic and social disparities if educational attainment levels do not increase. In 2005, Texas joined Hawaii, New Mexico, and California as "majority-minority" states in which the total non-White population exceeds that of the historical White majority (TPG, 2007, p. 37). By 2050, it is projected that the half of the American population will be comprised of minority groups and by 2060, the nation will be majority minority (Lopez, 2006). From 2000 to 2010, Hispanics are projected to account for 39% of the Nation's population growth; 45% from 2010 to 2030, and 60% from 2030 to 2050 (U.S. Census, 2008). Texas ranks second, behind California, with the highest Hispanic population in 2008 (U.S. Census, 2008).

A predictor for student success in higher education is college-readiness. According to the Texas Higher Education Coordinating Board, for the fall 2003, 40 % of first-time students entering community colleges were college-ready while, 60% required

developmental education (2008). For four-year universities, 71% of students entered college ready, while 29% of students required developmental education (THECB, 2008). For the same 2003 cohort, 51% of Whites required developmental education, while minority groups required developmental education at higher rates: 75% for African-Americans, 69% for Hispanics, and 60% of students identified as Other (THECB, 2008).

Fiscal issues associated with developmental education are significant and much debated. Studies and policy reports exhort the importance of higher education and the positive social and economic impact for the nation and states (IHEP, 2005; TPG, 2007). According to the Alliance for Excellent Education (AEE) (2006), the State of Texas would realize an additional $282 million in combined expenditures reductions and earnings increases first, if more high school students were prepared for college, and second if underprepared college students completed bachelor's degrees at the same rate as college-ready students. Texas spends approximately $88.5 million on developmental education; nationwide, the costs are $1.4 billion. The "nation loses more than $3.7 billion" (including developmental education costs), due to a lack of basic skills among high school graduates, and loses $2.3 billion because these students are unlikely to complete their postsecondary education, thus "reducing their earning potential" (AEE, 2006).

The status of developmental education.

In 1989, the 70th Texas Legislature mandated the Texas Academic Skills Program (TASP) for all students entering a Texas public institution of higher education beginning fall 1989. TASP was a program designed to ensure that students entering a Texas public

institution of higher education had the academic skills necessary to perform effectively in college level work. TASP included a testing component designed to provide information about the mathematics, reading, and writing skills of students. Students who were not proficient in these areas were required to participate in developmental education.

In spite of the apparent commitment to improving college readiness exemplified in state testing requirements, similar commitment to programs designed to resolve academic deficits demonstrated by those tests appears questionable at best. In 2000, the Texas Higher Education Coordinating Board (THECB) developed a statewide higher education plan, *Closing the Gaps*, focusing on closing educational gaps within Texas in the areas of student participation, student success, excellence, and research (THECB, 2000). This plan sets institutional targets for 2005, 2010, and 2015. Although the *Closing the Gaps* plan establishes statewide goals, it fails to mention developmental education. At no point in the plan, revisions, or progress reports is developmental education mentioned as a strategy to improve student participation or success.

In 2003, the 78th Texas legislature replaced TASP with the Texas Success Initiative (TSI). Under the TSI, Texas public institutions of higher education are required to assess the academic skills of each entering undergraduate student to determine the readiness of the student to enroll in freshman-level course work. For students failing to meet the assessment standards, the institution may refer the student to developmental course work. Although the TSI established minimum passing scores on college placement exams, it eliminated mandatory placement associated with TASP.

A major piece of legislation, House Bill 1, (High School Success and College Readiness Initiative) was enacted by the 79th Legislature in 2006. House Bill 1 requires collaboration between the Texas Education Agency and the Texas Higher Education Coordinating Board to improve curricular alignment between the K-12 system and higher education. However, according to the *State Formula Funding for Developmental Education and College Readiness and Texas Success Initiatives* (2007) report conducted by the Legislative Budget Board (LBB), little progress has occurred towards addressing the misalignment of fiscal resources:

> Despite the significant changes addressed in these initiatives [TSI &HB1] (and legislative appropriations totaling $206 million in General Revenue Funds for the 2006-2007 biennium), the state funding formula that drives the achievement of those goals has not changed. Proper alignment of state resources with these initiatives mitigates potential barriers to students' postsecondary success and ensures that state resources are allocated effectively. (p. 383)

The LBB (2007) report also found that legislation passed in 2003 and 2006, "encourages more effective developmental education" yet "no changes have been made since fiscal year 2003." The report cites the Texas Education Code 51.3062 as granting authority to the THECB to "'develop formulas to supplement the funding of developmental academic programs'…However, no new formulas have been developed for developmental education programs since [the] Texas Success Initiative implementation in 2003" (p. 383).

With an ever-increasing underprepared population, policy makers and educational leaders must support colleges and universities that are making the effort of tackling this challenging problem. Often the burden is placed on the students and the community colleges, both struggling with the requirements of accountability with little state support.

Developmental mathematics.

Academically underprepared students are significantly overrepresented in America's community colleges with the largest numbers needing developmental mathematics. According to the American Mathematical Association of Two-Year Colleges (AMATYC) (2006), of the approximately 1.3 million students enrolled in mathematics at a two-year college in fall 2005, fifty-seven percent were in developmental mathematics. Similarly, the majority of underprepared students in Texas are enrolled in developmental mathematics. According to the Texas Higher Education Coordinating Board (2008), over 40% of first-time-in-college (FTIC) students for fall 2003 were not prepared for college-level mathematics. More alarming is the poor rate of student success of students who took developmental courses. Only 29% of underprepared mathematics students achieved college readiness within four years (THECB, 2008).

Developmental mathematics students encounter many barriers as they enter an institution of higher education. These students are confronted with the stigma of being labeled as developmental or remedial, thus encountering feelings of inadequacy that will affect their future goals for success. These students are often limited to non-credit course offerings, limited advising, and an enduring cycle of ineffective and inefficient policy and procedural loops. According to the National Association of Developmental Education (NADE) (2003), "Developmental instruction addresses not only the remediation of subject-specific deficiencies, but motivational and learning deficiencies as well" (p. 1). Students enrolled in developmental mathematics face other barriers as well. Not only do these students enter underprepared in basic mathematics, many lack learning and study

skills. However, "a fair number of these students can succeed if the DE [developmental education] environment provides strong support in learning skills as well as academic content" (NADE, 2003, p. 1).

Many developmental mathematics students may also have deficiencies in reading, writing, plus poor organizational skills, and "will have difficulty succeeding even when the programmatic aspects of developmental instruction are at their strongest" (NADE, 2003, p. 1). Many students face environmental, economic, and social barriers. It is also important to note that many underprepared students are first generation college students. First-generation students, who are the first of the families to enter into postsecondary education, are more likely to be placed in vocational, technical, and/or remedial programs, and have little or no knowledge about the college experience (Striplin, 1999). It is important to remember that underprepared students enter the game at varying levels of academic, social, and emotional skills that differ from what is perceived as the *traditional college student*.

Key Characteristics of Developmental Education Programs

Community colleges, by their very nature as open-admissions and open-access institution of higher education, serve the largest numbers of underprepared students nationwide. According to Oudenhoven (2002), "Open-door admission policies, affordable tuition, convenient locations, and emphasis on teaching and learning, and a welcoming attitude make community colleges a logical starting place for many of these [underprepared] students" (p. 37). Community colleges must in turn seek solutions to improve student outcomes of an ever-increasing student population that requires

remediation. Based on relevant research, the following nine characteristics are critical practices and approaches that focus on organizational, teaching, and student effectiveness.

Vision, values, and culture.

Successful organizations build cohesive cultures around a common set of norms, values, and ideas that create an appropriate focus (Peters & Waterman, 1982). According to Hanson (2003), "Even more than the forces of bureaucracy, the organization's culture is the glue that binds people together and serves as a screen through which the world is viewed" (p. 160). Viewing the institution/organization as a culture with shared values, beliefs, and meanings may highlight whether developmental education is accepted or shunned in that culture. Yet culture cannot be viewed as a simple variable. It is an "active, living phenomenon through which people jointly create and re-create in which they live" (Morgan, 2006, p. 137).

An institution-wide commitment to developmental education is reflected in clearly defined mission, goals, and objectives to improve student performance and promote student success (Boylan, 2002; McClenney, 2005). The commitment of a college can be viewed through its formal and informal interactions with the college and broader community. The leadership, mission, and institutional policies provide an inside look of an institution's priorities. By making developmental education an institutional priority, colleges can establish its legitimacy within the institutional culture. According to Boylan, "It should come as no surprise that developmental education is most successful at institutions that consider it a priority" (2002, p. 22).

The establishment of developmental education as a priority requires the institution as a whole to recognize the need to work holistically in serving the needs of the student. Roueche and Roueche (1999) describe a total program approach:

> Most of what we know is that a total program approach to the complex needs of at-risk students--systematic approach--has the greatest potential for success. Moreover, the program should be but one part of an institution wide commitment to success for all students that includes student development professionals collaborating with faculty and staff to implement policies that will improve student retention, achievement, and graduation rates. (p. 29)

Successful developmental education efforts are found in institutions that make developmental education a priority (Roueche & Baker, 1987; Roueche & Roueche, 1993; Roueche & Roueche, 1999). A study conducted by Boylan and Saxon (1998) of Texas colleges and universities developmental education programs found that institutions establishing developmental education as a priority were the most successful at improving student performance. It was also found that mission, goals, and objectives that include developmental education had higher post-testing success rates on the state mandated test and higher retention rates than institutions who did not have written statement of goals and objectives (Boylan & Saxon, 1998).

It is critical that the college and broader community share a collective sense of mission, values, and vision with regard to developmental education. It is equally important and there exist a sense of urgency in finding solutions for program improvement. According to Roueche and Roueche (1999), "Colleges must become more humane organizations" (p. 32), and individuals and groups within the college must have a collective sense of responsibility to improve programs and services to ensure academic

success for the underprepared student. Explicit public commitment to achieve equity in student learning, persistence, and attainment is important and colleges must "establish a goal to ensure that students who come underprepared for college-level are able to succeed at rates at least as high as those who come fully prepared" (McClenney, 2005, p.1). Goals must be shared with stakeholders, including the most important group, students. According to Boylan (2002), "…goals should be developed collaboratively with all those involved in the developmental effort" (p 20).

The community college must establish relationships with the broader community, including other organizations that are in the business of education. Adult education programs are important partners that also provide remedial services to students. Many of the community college students come from these programs. Community college recruitment and outreach interventions must make a concerted effort to target this population. The public school system is another major partner who shares mutual goals for student success with the community college. McCabe (2000) recommends that community colleges "should create a coordinated, seamless transition from high school to college" and "High School assessment and college-placement programs should be integrated into a seamless assessment system" (p. 51). Roueche and Roueche (1999) contend that, "A plan for improving student performance, developed and implemented by colleges in partnership with public schools, elementary through high school, has the greatest potential for achieving college readiness for first-time students..." (p. 48). Community colleges and high schools can work collaboratively to develop strategies that indirectly affect students such as curricular alignment between sectors, and directly target

students with initiatives such as early testing and intensive instruction to address academic weaknesses of students before they leave high school.

The culture of evidence.

Data collection, analysis, and reporting are important methods to ensure accountability and effectiveness. Information about learning, persistence, and attainment levels of developmental education students must be systematic, timely, useful, and user-friendly. Colleges must commit to systematic program evaluations that includes cohort tracking, and results must be disseminated to the college and broader community (McClenney, 2005; Boylan, 2002, McCabe, 2003).

Building a culture of evidence begins with the institution asking questions about its own performance to determine how it measures up to other institutions (Roueche & Roueche, 1999, p. 44). It is the responsibility of the institution to seek out resources to assist in building an effective developmental education program. According to McCabe (2000), most institutions fail to utilize available research concerning developmental education. He states, "In recent years, some exciting and effective remedial programs have been developed. Nevertheless, the information concerning effective practices has been largely ignored" (p. 44)**.** Membership with professional associations allows the institution to gain insight on best practices and grants opportunities for collaboration with developmental education think tanks and other university and community colleges with similar goals in mind.

In consideration of dynamic societal change, Higbee, Arendale, and Lundell (2005) recommend new areas for research due to "changing demographics, and political

realities, ongoing scholarship across educational levels, and improved research protocols and procedures" (p. 11). Formal measures such as age, gender, and race/ethnicity are commonly used, but additional measures exploring students' motivation, perceptions of academic ability and stressors will provide information of affective barriers to student achievement. It is imperative to determine if students in developmental education courses are successful in credit courses "Research that focuses on the process of the intervention in addition to the final product can yield valuable information that can be use in program revision and improvement" (Higbee, et. al., 2005, p. 8). In addition, community colleges must define measures that are specific for two-year students, as opposed to four-year students. Consideration should be given to how students progress through developmental education towards final academic outcomes such as developmental education sequence completion and success in college-level courses (Leibach & Jenkins, (2008).

Alfred, Ewell, Hudgins, and McClenney (1999) recommend the following actions that contribute to the establishment of a strong culture of evidence, which can move colleges in the right direction towards program improvement:

- Collaborate with college stakeholders, both internal and external, to determine their needs and what they expect from the college.
- Update the college mission statement to reflect stakeholder needs and expectations.
- State the mission in language that lets the institution assess performance.
- Identify a few key performance indicators that demonstrate mission attainment and, using these measures, assess institutional responsiveness to stakeholders needs. Try to measure everything diffuses an institution's focus on important priorities.
- Set benchmarks for each performance indicator.
- Develop a system for collecting and analyzing performance data.

- Use assessment data to enhance decision-making and to inform stakeholders.
- Keep the assessment process simple and flexible.
- Be clear in presentation of data and avoid unnecessary jargon.
- Put performance in context. Submit data on indicators with crisp, coherent, factual information focused on institutional mission and clientele.
- Be proactive; do not wait for quality measures to be imposed on your college.
- Establish financial resources and internal management systems to support a performance evaluation process. (pp.39-40)

Through rigorous examination and open discussions of information about learning, persistence, and attainment levels of developmental education students, colleges can take the steps towards establishing a strong culture of evidence.

Strategic focus, planning, and resource allocation.

Effective planning and priority setting for developmental education programs is evidenced by a strategic plan that clearly includes developmental education and is used to guide operational planning. Colleges benefit from consistent and continuous review of student and institutional assessment/evaluations, which inform plans for improvement in developmental education programs and services. Perin (2005) states:

> …it is important to acknowledge the difficulty of institutional change. As experienced practitioners already know, vision, risk taking, time effort, and practical resources are necessary to effect the deep changes needed to boost the achievement of an increasingly diverse student body. (p. 37).

Evaluation is a critical component in determining institutional effectiveness. Evaluation methods should be systematic. Boylan (2002) presents five components of a systematic evaluation: (1) evaluation is done at regular intervals; (2) evaluation activities are undertaken as part of a systematic plan; (3) evaluation activities are both formative summative; (4) evaluation activities use a variety of measures; and (5) evaluation

information is shared with a variety of audiences (pp. 39-40). Results gathered through assessments/evaluations should be widely disseminated (Roueche and Roueche, 1999; McClenney, 2005), and guide planning and priority setting. In addition, priorities identified through the strategic and planning phase should guide resource planning and allocation.

Leadership for learning.

Building data-informed institutional cultures that are firmly focused on student success at all levels is a function of leadership. Leadership at all levels sets the tone for the community college culture. Leadership has an obligation to respond to the community's needs and in this case the needs of developmental education. According to Roueche, Baker, and Rose (2002), "Leadership is the ability to influence, shape, and embed values, attitudes, beliefs, and behaviors consistent to the unique mission of the community college" (p. 18). McCabe (2000) states, "Community colleges must give remedial education higher priority and greater support" (p. 48). According to Boylan (2002), "If developmental education is to be successful, it must be an institutional priority supported by the institutional community" (2002, p. 7). It is through the community college leadership that developmental education programs can be effective in improving student performance.

Institutional leadership must demonstrate its commitment to developmental education by actively seeking methods to improve student success and then applying those methods. According to O'Banion (1997), "To encourage positive change, the college president needs to be a scholar of the process, read widely about the issues,

develop an internal and external network of experts on the topic of learning, and be a part of the college's learning team--only then will the project move forward" (p. 117).

Innovation, the act of thinking and acting "out of the box," is often stifled by traditional modes of thinking, yet it is critical to building effective developmental education programs. The demands for improved outcomes for the underprepared student necessitate the act of "breaking the box" in order to improve the educational opportunities for this population.

The people of the college.

Effective colleges place priority on recruiting, selecting, and retaining highly qualified and motivated staff to work with their students. Careful selection of faculty and staff who will work with developmental students is critical to student success in resolving developmental issues (McClenney, 2005); thus colleges must recruit, develop, and hire the best faculty (Roueche and Roueche, 1999).

The faculty member's role is imperative for the learning of the student. The interaction between the student and faculty oftentimes leads to the initial formation of positive or negative perceptions of the college, which influences their educational experience. According to Roueche and Snow (1977), "Students can learn and succeed if those responsible for their education want them to" (p. 130). Faculty attitudes regarding students have been found to influence instructional content and delivery (Roueche and Mink, 1980). According to Astin (1977), "Student-faculty interaction has a stronger relationship to student satisfaction with the college experience than any other

involvement variable, or indeed, any other student or institutional characteristic" (p.223). Tinto (1993) also reiterates the importance of student and faculty interaction:

> …contact with the faculty, both inside and outside the classroom, serves to directly shape learning and persistence, but also because their actions shape the nature of classroom communities and influence the degree and manner in which students become involved in learning in those settings (p. 133).

Teaching and learning is at the heart of the educational institution but it should not be assumed that the interest of the student takes precedence. It is imperative that a belief in the capability of underprepared students be evident in institutional and instructional practices. Unfortunately, not many faculty members choose to work with underprepared student. Developmental education courses taught by adjunct faculty has become the norm at many institutions. According to Moore (1970), "Too many teachers consider the task of teaching the high-risk student in the junior college to be academic social work; and making special remedial curricula available to this student is often thought to be academic welfare" (p. 63).

In a study conducted by Gross (1999) on the perceptions of developmental education students held by Maryland faculty members, it was found that the overall attitude of faculty members were negative. It also found that faculty members believe that some developmental students bring behavior and attitude problems with them and some students are incapable of achieving academically. The study also found that faculty members believe that inadequately prepared students assume little responsibility for their own learning. According to Roueche and Roueche (1993):

> [T]here is a long history of faculty concern, if not outright hostility, about student underpreparedness and lack of educational experiences, and the problems they generate for institutions and for teachers professionally. As the underprepared

> students were pushed farther down the academic ladder…community colleges bore the brunt of the academic and social problems of the widening student diversity. (p. 100)

The negative perceptions of the underprepared student have a detrimental effect on student achievement. The relationship between faculty and students must be meaningful and significant. Faculty are viewed as the conduit to academic learning. A move away from the teacher-centered approach to the student-centered or learner-centered approach, posited by O'Banion (1995-1996), leads faculty to find innovative ways to improve students' understanding and learning. The growing and diverse needs of students in developmental education would greatly benefit from institutions that place "learning first and provides educational experiences for learners anyway, anyplace, anytime" (p. 22).

Professional development and involvement in professional associations provides opportunities for faculty and staff to learn of effective and emerging practices in the field of developmental education (Boylan, 2002). All faculty and staff who work with underprepared students need quality professional development and must be supported by senior leadership (Boylan, 2002; McCabe, 2005; McClenney, 2005). In addition, new faculty, adjuncts, and staff greatly benefit from mentoring and orientation.

Institutional policies and practices.

While the people of the colleges provide the human interface with students, institutional policies and practices shape the nature and content of their interactions. Developmental education approaches vary among institutions and no agreed upon standard of facilitating these programs exists. The institutional structure may be

centralized or decentralized. Assessment and placement standards also vary with mandatory and non-mandatory testing and placement; with versions in the middle. To further complicate the picture, standards and policies regarding what comprises "college-level" work vary across and within states. Without a consistent standard in higher education, individual institutions must put policies in place to address the needs of this population (Oudenhoven, 2002).

Organizational arrangement of developmental education programs may be regarded as an indicator of institutional commitment. According to Roueche, Ely, and Roueche (2001), a centralized model is a method that proves institutional commitment:

> The centralized model, such as the Community College of Denver, helps prevent at-risk students from falling through the academic cracks in the system and establishes a highly visible presence for the important role that developmental education plays in improving student success at the college" (p 115).

Many argue that a centralized developmental program where developmental courses and services are highly coordinated and housed in a single department are more successful than are decentralized programs (Roueche & Baker, 1987; Boylan, Bliss, & Bonham, 1997; Roueche & Snow, 1977).

A study conducted by Perin and Charron (2005), found that "the ease of administering centralized and main streamed models seemed roughly the same" (p. 29). The study found that mainstreamed or decentralized approaches benefited from "economies of scale but did not prioritize the hiring of instructors with specialized backgrounds" (2005, p. 29). In addition, centralized models in some cases might limit exposure of instructors who teach developmental education content and performance requirements of credit courses. This may lead to isolation of the developmental education

program with little communication occurring across disciplines. Additional factors such as placement policy, size of academic department, and internal politics affect the organizational structure of developmental education programs (Perin, 2005). Perin (2005) found that despite varying organizational structures of developmental education, "many faculty thought decentralization was most beneficial to students" (p. 30).

Agreement that mandatory placement and assessment is consistent with effective developmental education policies is well documented (Roueche and Roueche, 1999; Boylan, 2002; McCabe, 2003). According to McCabe (2003), "Mandatory testing and placement is essential to the students' best interest and to maintaining a quality academic program" (p. 37). It is critical to ensure that students are assessed and placed in the appropriate courses based on their skill level (Roueche and Roueche, 1999; Boylan, 2002). Many states have implemented mandatory placement and assessment; however, some states have no such policies in place. Under current statute, Texas colleges and universities no longer require mandatory placement of students in developmental education.

Colleges and universities may also have other practices in place that further imperil success of the underprepared student. Late registration has been criticized for allowing students who may already be ill prepared to fall further behind due the option of enrolling late for a class (Roueche and Roueche, 1999, McCabe, 2003, McClenney, 2005). In addition, working students enrolled in developmental education should be required to enroll in fewer course hours (Roueche and Roueche, 1999; McClenney, 2005).

Simultaneous enrollment in college-level courses is held by some to be an effective motivator for students in developmental education. However, some researchers argue that this option for underprepared students is ill-advised (Roueche &Roueche, 1999; McCabe, 2003). According to Roueche and Roueche (1999), "…enrolling in skill and regular academic courses simultaneously should be eliminated or carefully monitored" due to students' "…inability to handle the workload or to meet the skill demands…will not motivate students to continue" (p. 30).

Other practices that can be effective in improving the academic experience of the underprepared student are mandatory advising, orientation, and student success courses. According to Roueche, Ely, and Roueche (2001), "Key to success of academic advising is recognizing the critical nature of the undecided and the unprepared student-requiring academic guidance upon entering college" (p. 92). The Community College of Denver had an expansive advising system with an established track record for supporting student success. This system includes a student self-assessment process, faculty roster notations to identify students who may need tutoring, additional support or financial aid, an early alert system, and the transfer advising center.

Orientation and student success courses are ideal methods to acclimate developmental students to the community college environment (McCabe, 2003). It is only recently that the community college has implemented these models, which are more common at four-year universities.

Instructional approaches and practices.

Among the basic tenets of theories on student development is that active engagement in purposeful academic activity is critical to persistence and success in college. For community college students, two-thirds of whom attend college part time, the classroom is the primary site of engagement. While faculty are critical to fostering student engagement in any postsecondary environment, their role in creating an effective environment of teaching and learning is even more critical in community colleges.

Best practice findings indicate that faculty contribute to student success by clearly defining student-learning outcomes for each entry-level course. Learning outcomes prerequisites should be clear and relational as well as sequential and aligned. Further, developing common criteria or rubrics allows faculty to ascertain and document the students' level of attainment on the established learning outcomes. Curriculum alignment between exit-level developmental education course and entry-level credit courses is imperative to ensure consistency (Boylan, 2002; McCabe, 2003; McClenney, 2005). According to Boylan (2002), "Failure to insure that there is a match between the exit requirements of developmental education and the entry requirements for the college curriculum is one of the biggest mistakes a developmental program can make" (p. 89).

In addition, critical thinking should be integrated into the developmental education curriculum. According to Higbee, et al. (2005), educators should actively encourage critical thinking in their students, "it is critical that community college developmental educators facilitate students' ability to think for themselves, evaluate the relative merits of different points of view, and make commitment accordingly" (p. 7).

It is clear that positive faculty interaction can affect a students' academic progress. According to AMATYC (2006), "Whole knowledge of content is essential in teaching any discipline, effective teaching is the result of integrating content and pedagogical knowledge" (p. 52). To address the academic needs of the underprepared student, Levin and Koski (1998) proposed designing interventions with the following components:

- Motivation: building on the interest and goals of the student and providing institutional credit towards degrees or certificates.
- Substance: building skills within a substantive or real-world context as opposed to a more abstract approach.
- Inquiry: developing students' inquiry and research skills to help them learn about other subjects and areas about which they might be curious.
- Independence: encouraging students to do independent meandering with the course structure to develop their own ideas, applications, and understandings.
- Multiple approaches: using collaboration and teamwork, technology, tutoring, and independent investigating as suited to students needs.
- High standards: setting high standards and expectations that all student will meet if they make adequate efforts and are given appropriate resources to support their learning.
- Problem-solving: viewing learning less as an encyclopedic endeavor and more as a way of determining what needs to be learned and how, and then implementing "the how."
- Connectiveness: emphasizing the links among different subjects and experiences and how they can contribute to learning rather than seeing each subject and learning experience as isolated and independent.
- Supportive context: recognizing that to large degree learning is a social activity that thrives on healthy social interaction, encouragement, and support. (p. 16)

Many promising instructional practices integrate Levin and Koski (1998) components as described above. The review of literature with regards to promising instructional approaches frequently mentions the use of cooperative learning,

collaborative learning, learning communities, accelerated learning, contextual learning, mastery learning, and problem-based learning as instructional practices that can influence student achievement (Tinto, 1993; AMATYC, 2006; Kuh,et al., 2006) .

Cooperative learning is a structured approach that guides groups of students toward content related common goals. The faculty member facilitates the learning by encouraging the cooperation of students to solve problems collectively. This type of learning is extensively used in elementary and secondary schools (Johnson, Johnson, and Holubec, 1986; Slavin, 1990), and is now expanding into institutions of higher education (Tinto, 1993).

Collaborative learning is "defined strictly as an unstructured process in which participants define problems, develop procedures, and produce socially constructed knowledge" (AMATYC, 2006, p. 53). According to Tinto (1993), "the *process* of collaborative learning is as important as is content...the latter is not insignificant, the primary intent of the course is to actively involve student in the learning process in a collaborative, rather than competitive manner" (p. 168-169). Collaborative learning encourages the joint effort of student-to-student or student-to-faculty towards learning. Typically done in groups, it advances peer learning and teaching, social networking, and improves student interest (Roueche, et. al, 2003).

Learning communities comprise another method that according to research yields positive results in the area of persistence (Tinto, 1993). Developmental education students are at high risk for dropping out of coursework. The use of learning communities can enhance the prospects of increased persistence for the underprepared student.

Students work towards goals in small group settings. Through this social network, students receive support from a community of peers where valued relationships are formed and positive experiences greatly enhance persistence.

Many underprepared students discover that the time needed to complete a developmental education program is quite extensive. The sequence of levels can include two to five courses within the same content area. Many students become frustrated, drop out, and are not likely to return. An alternative is to provide instruction in a self-paced or accelerated format. A recent study conducted by Biswas (2007) explored acceleration programs in three Achieving the Dream institutions.

Housatonic Community College in Connecticut, is experimenting with a self-paced, modularized, competency-based developmental math course (Biswas, 2007). Student attainment of math competencies is assessed by the use of self-paced weekly modules. Courses are offered in three five-week modules. Students have the benefit of an open-entry and open-exit program that allows student to move at their own pace after mastering the competencies. In addition, students learn in a lab setting with instructional and computer support by faculty (Biswas, 2007).

The Community College of Denver (CCD) has developed an acceleration program called "Fast Start" that allows a student to complete two levels of math and/or reading and English in one semester. Students are enrolled in a one-credit hour orientation course and meet weekly for six hours in cohorts. In addition, CCD offers a self-paced alternative that follows the open-entry and open-exit format (Biswas, 2007).

Another promising method in acceleration practices is the use of refresher courses. Mountain Empire Community College, in Virginia, is experimenting with refresher courses for students with a low need for remediation based on placement scores. The courses are broken into arithmetic and algebra. For the long semesters, arithmetic is offered over five weeks and algebra over ten weeks, with summer semesters holding condensed versions (Biswas, 2007).

There are, however, challenges facing institutions that utilize acceleration as a delivery method in developmental mathematics such as state enrollment policies and data reporting procedures that act as barriers to implementation. State policy makers and college leadership must work together to ensure policies are thoughtful and encourage innovation (Biswas, 2007).

Contextual learning responds to the belief that retention of information can be increased if presented and applied in context. According to Crawford (2001), contextual learning has "been shown by cognitive science and learning research to be the best method[s] to help students construct and use knowledge in mathematics and science" (p. iii). According to O'Banion (1997), "Understanding comes from working with and experience with problems and issues rather than from memorizing information about problems and issues" (p. 83). Contextual learning is often used in workforce or vocational training programs within the community colleges (CSS, 2007). Further exploration is needed to discern the use of contextual learning in the traditional academic setting.

Problem based learning (PBL) "emphasizes the learning and application of mathematical concepts in connection with student exploration of a complex problem…deriving from a 'real world situation'" (CSS, 2007, p.45). Problem based learning has shown particular promise in mathematics teaching and learning where it "leads to deeper understanding of mathematical concepts and avoids learning by imitation" (CSS, 2007, p. 45). The success of PBL students versus students taught in traditional settings is positive. Based on the use of testing to determine achievement, PBL students had higher achievement versus students in traditional content-based courses (Boaler, 1998).

Supplemental practices can provide important academic support for the underprepared student. Supplemental Instruction (SI) is a well-documented and successful academic support intervention. According to Boylan (2002), "Supplemental Instruction combines the advantages of collaborative learning with an emphasis on developing study strategies associated with a particular subject area" (p. 75). SI tutors work closely with class instructors and provide structured study sessions for students. SI has consistently been found to improve student success (Blanc, Debuhr, & Martin, 1983; Rettinger, & Palmer, 1996; Ramirez, 1997).

The establishment of tutoring, academic centers that focus on writing, reading, and mathematics contributes to student success. Within these centers, tutors are available to provide individualized and group tutoring. According to Roueche and Roueche (1999), "Tutoring, study groups, learning assistance centers, and other academic support services

expand opportunities for learning that are limited by scheduled class periods and teacher-student ratios" (p. 32). Computers are available, as well as academic resources.

A practice that shows great promise for improving academic achievement for the developmental student is the student development course (Barefoot, 2002; Pascarella & Terenzini, 2005). These courses provide instruction in study skills, time management, and learning styles, as well as bridge access gaps between academic and student services. Many of these courses have been tied to first-year experience initiatives. The student success course format is versatile and easily adaptable and many institutions have found linking them with developmental courses an effective way to help underprepared students succeed.

McCabe (2002) recommends institutions to consider certification through the National Association of Development Education (NADE). NADE was founded in 1999 to recognize program components that meet or exceed the criteria of good practices as defined by professional research and literature of the field. NADE certification is awarded for program components of a learning assistance or developmental education program. The following program components are eligible for certification: tutoring services, adjunct instruction, and developmental coursework. In addition, the College Reading and Learning Association (CRLA) also provides certification for mentoring and tutoring programs.

Student support practices.

Underprepared students often have significant needs in different areas and thus have the most to gain from a comprehensive student service program fully integrated

with instructional services (Boylan, 2002; McClenney, 2005). Strong student services programs in the college community seek to establish partnerships with the broader community (Roueche & Roueche, 1999). Student services can play a big role in pre-enrollment activities by collaborating with public schools in recruitment efforts that includes advising and financial assistance. In addition, partnerships with local high schools to provide early college placement testing to determine remediation needs and provide instruction to target academic weakness through initiatives such as bridge programs can be effective.

Promising practices in serving the developmental education student include providing intensive advising and case management for the most at-risk students (McCabe, 2003; McClenney, 2005). The Community of College at Denver (CCD) advising system has been lauded as an effective model for providing student services (Roueche, Ely, & Roueche, 2001). The CCD found case management teams as a major contributor to student retention. According to Roueche, Ely, & Roueche (2001), "These teams humanize the academic experience by lavishing more time and attention on each student" (p. 94) The role of the case manager is to meet with students and to provide guidance and reassurance about their college experience and also to formulate an educational plan.

A major determinant of whether a student enrolls in higher education is their economic circumstance. Financial assistance plays a significant role in the determination if a student enrolls and for how long. According to Kuh et al. (2005), "students who receive financial aid (as compared to those who do not) are less likely to leave

postsecondary education after two years and more likely to earn a degree or certificate" (p. 408). The data also indicates that financial aid has a significant impact on "students enrolled in two- or three-year programs and those from families with the lowest incomes" (p. 408).

Other programs such as early alert reporting systems, peer mentoring, and support groups appear to hold promise for supporting the success of developmental education students. However, more research is required to develop a better understanding of how these programs influence academic outcomes, and for whom.

Grant-supported programs.

As noted by Boylan (2002), developmental education programs are the least fiscally supported programs on a college campus, with few exceptions. While developmental education programs provide a consistent source of revenue via tuition and state credit hour funding, these funds are often diverted to higher cost programs. Many colleges seek grant monies to supplement developmental education funding. According to Boylan (2002), "The most common sources for grant funds for developmental education come from Title III, Title IV, and Title V grants from the U.S. Department of Education" (p. 29).

Title III: Institutional Aid for Minority Serving Institutions provides support for institutions that serve large percentages of minority and disadvantaged students. Title IV supports need-based financial aid programs for students, including Pell grants. Title V: Developing Institutions provides support for institutions that serve a large percentage of Hispanics (Hispanic Serving Institutions).

Title IV also funds TRIO programs, which are educational opportunity outreach programs that target students from disadvantaged backgrounds, specifically those who are first-generation college students and low-income students. The services provided under TRIO strictly serve the target population, thus small numbers of students typically benefit from this program. Many institutions of higher education house TRIO programs that provide a wide array of academic and student support services to at-risk students such as academic advising, personal counseling, financial aid, and career counseling. In addition, these programs offer tutoring, supplemental instruction, mentoring, orientation and workshops on learning styles and study skills. These programs are known for implementing innovative practices and have shown tremendous success. However, services such as these are fairly costly to maintain. Colleges have difficulty expanding such services college wide, and services provided through TRIO programs are often not sustained after a loss of federal funding.

Achieving the Dream (ATD) is a multiyear national initiative that is funded by foundations and participating colleges. ATD's primary focus is to improve academic outcomes of at-risk students, traditionally students of color and low-income students by spearheading change at the institutional, state, and national level.

Organizational Framework

Organizations are entities designed with a purpose in mind. They are structured and managed to pursue the goals and objectives put forth by internal and/or external forces. Dependent on its purpose the boundaries of the organization can be porous or impermeable. To grapple with the various forms of organizations, Morgan (2006)

proposes the use of metaphors as a mode of thinking about the nature of organizations. According to Morgan (2006), "organizations as machines," originated during the industrial revolution, where the growth of "bureaucratization and routinization of life" took place (p. 16). The intensification towards efficiency and division of labor occurred. During this time Max Weber's contribution of bureaucracy also led to the rise of "classical management theory" and "scientific management" that advocated the bureaucratization of organizations. This movement promoted the top-down approach in management. Control, discipline, and a line of authority pervade the mechanistic organization, which still exists today. These organizations work effectively in stable and protected environments but do not function well in competitive and turbulent arenas (Morgan, 2006).

Over the past 60 years, organizational theorists have moved away from "mechanical science and toward biology as a source of ideas for thinking of organizations" bringing forth the idea that similar to organisms, organizations are "open" to their environment and must relate and adapt in order to survive (Morgan, 2006, p. 38). Relevant to this thinking is that the organization should exist and organize "with the environment in mind" stressing that the organization should constantly scan the environment for change and adapt strategically and operationally, and "must be sensitive to what is occurring in the world beyond" (Morgan, 2006, p. 39). In addition, this approach attempts to build alliances and remove conflicts among systems.

Contingency theory incorporates the principles of an open-systems approach, proposing that environmental factors dictate how the organization should be organized

and structured. As internal and external forces change so should the organization, thus organizational approaches are contingent upon these drivers. The main ideas posited by Morgan (2006) of this approach are as follows:

- Organizations are open systems that need careful management to satisfy and balance internal needs and to adapt to environmental circumstances.
- There is no one best way of organizing. The appropriate form depends on the kind of task or environment with which one is dealing.
- Management must be concerned, above all else, with achieving alignments and 'good fits'.
- Different approaches to management may be necessary to perform different tasks within the same organization.
- Different types or 'species' of organizations are needed in different types of environments. (p. 42)

Chapter Summary

This chapter provides an overview of developmental education and the state of affairs of developmental education in Texas, in addition to policies and practices that comprise effective developmental education programs. In addition, the organizing theoretical framework that guided this study was presented.

As noted in this chapter, the academic needs of underprepared students are exceeding the capability of higher education institutions. The community college plays has an important role in addressing the developmental education problem; further, it appears that the community college will be the lone institution addressing this issue as more states pass legislation to remove remediation from four-year institutions. Roueche and Roueche (1999) state, "As 'democracy's colleges' and 'America's social inventions,'

community colleges may be the best institutions of higher education to develop viable responses to many of the country's problems" (p. 1).

It is imperative for community college leadership to look forward to the future and see change in a positive light. The current climate is to continue to maintain traditional models that are ineffective in improving student performance. According to B. McClenney, "People in all areas of college should be pulling for those involved [in developmental education] since the pipeline needs to supply competent students for all of the other programs" (quoted in Roueche, Ely, & Roueche, 2001, p. 115). By consistently assessing, reviewing, and revising developmental mathematics programs at all levels, from institutional priorities to program structure to instructional strategies, the needs of academically underprepared students can be met more effectively and efficiently.

CHAPTER III: METHODOLOGY

Introduction

This chapter will address the scope of the research and research methodology, as well as the role of the researcher and participant in the data collection, analysis, and interpretation. The following sections describe the approach used to determine if a relationship exists between academic achievement of developmental mathematics students and implementation of identified practices in developmental education programs.

Rationale for Study

This researcher sought to discover to what extent UCCD colleges work towards the implementation of practices that can improve academic performance of developmental education students, more specifically developmental mathematics students. Data indicates that the majority of entering students in the UCCD colleges require developmental mathematics. With dismal rates of success in course completion of developmental and college-level mathematics, these students are at high risk of dropping out and never return to the community college. This study seeks to answer to what extent UCCD colleges implement effective practices based on the academic needs of their entering students.

Theoretical Framework

Contingency theory provides the basis this study's theoretical framework, which brings forth the notion that effective organizations adapt to changes in the environment. According to Morgan (2006), "Like organizations in the natural world, it seems that

successful organizations evolve appropriate structures and processes for dealing with the challenges of their external environments" (p. 54). The organizational structure, comprised of interrelated parts or sub-systems, is reliant on the task or environment where the organization resides. Effective organizations seek compatibility between the sub-systems in order to have a "good fit" with the environment (Morgan, 2006).

This researcher argues that although the larger system (community college) exist in a moderately changing environment, and thus its organizational structure functions to balance "mechanistic" and "organic" approaches, there does exist organizational sub-systems that encounter potent change which requires the organization to act more "organically." As such, the organization must allow sub-systems to be agile and flexible. It is in this view that this researcher used contingency theory to explore the UCCD colleges' capability to recognize and adapt to the growing need for the provision of effective remediation to the ever-increasing numbers of underprepared students. The following research questions were used to guide this study.

Research questions.

The following research questions were used to guide this study.

1. To what extent do developmental mathematics students achieve academic success in the UCCD colleges as indicated by performance on academic outcomes?

Sub-questions:

- What proportion of FTIC students met the state standard in mathematics?
- How does this compare with the proportion of FTIC students who fell below the state standard in mathematics?
- What proportion of FTIC students who fell below the state standard in mathematics and attempted developmental mathematics met the Texas Success Initiative (TSI) obligation?
- What proportion of FTIC students who met the TSI obligation in mathematics through developmental education attempted a college-level mathematics course and completed with a grade of A, B, or C as compared to college-ready students?

2. To what extent do the UCCD colleges differ on the level of effort towards implementation of effective practices and what are the distinguishing characteristics between the UCCD developmental education programs?
3. What is the relationship between student performance in developmental mathematics and the incidence of identified effective practices in developmental education programs in the UCCD colleges?

Research hypotheses (alternative and null).

1. A relationship exists between student performance and effective practices in developmental education programs.
2. There is no relationship between student performance and effective practices in developmental education programs.

Research Design

According to Trochim (2001), "Research design provides the glue that holds the research project together" (p. 171). It provides structure and acts as a guide to ensure the

research study is timely and conducted with diligence. Quantitative research that examines data in numerical form is informative and timesaving because it condenses large amounts of data into manageable forms. According to Gravetter and Wallnau (2007), "Statistical procedures help ensure that the information or observations are presented and interpreted in an accurate and informative way" (p. 4).

This study utilized a quantitative design in a sequential approach. This sequential approach provides for one type of data to be the "basis for collection of another type of data" (Mertens, 2005, p. 292). Phase I set out to answer research question one. This phase examined student performance on state defined academic outcomes of three first-time-in-college (FTIC) student cohort groups who were enrolled in developmental mathematics and college-level mathematics from fall 2003, 2004, and 2005 over a three-year period. The Texas Higher Education Coordinating Board maintains these data acquired through the Texas Higher Education Data system. These data were explored to discover to what extent entering students who did not meet the state standard in mathematics succeeded in successfully meeting the following academic outcomes: the state requirement (Texas Success Initiative obligation) and successful completion of a college-level mathematics course. In addition, further examination was conducted to determine to what extent the UCCD colleges differ on student performance outcomes.

The purpose of Phase II was to determine to what extent UCCD colleges differ on the level of effort towards implementation of effective practices and to identify distinguishing characteristics of the respective developmental education programs. This was accomplished by examining the responses to the Developmental Education Program

Survey (DEPS) that was administered to college administration, faculty, and staff at each college to determine the level of effort colleges committed towards implementation of effective practices. The online survey was modeled after the Community College Inventory (CCI) developed by Byron McClenney and Kay McClenney (McClenney and McClenney, 2003). The characteristics that comprise effective developmental education programs that were explored are as follows: Mission, Values, and Culture; The Culture of Evidence; Strategic Focus, Planning, and Resource Allocation; Leadership for Learning; The People of the College; Institutional Policy and Practices; Instructional Practices; Student Support Practices; and Grant-Supported Programs.

Phase III examined the relationship of student performance on academic outcomes and effort level of each UCCD college on the implementation of effective practices. This was accomplished by the examination of academic outcome data (Phase I) and institutional effort level (Phase II). Both sets of data were used to rank the colleges based on student and institutional performance.

Description of Sample

For Phase I, the data sample was acquired through the state data collection agency, the Texas Higher Education Data system, which is maintained by the Texas Higher Education Coordinating Board (THECB). The cohort data sample was selected from students enrolled in the fall 2003, 2004, and 2005 semesters. The data sample consisted of FTIC students who enrolled in the four community colleges located in the UCCD. The student enrollment for the three years was averaged for each college (Table 3.1).

Table 3.1: FTIC Student Enrollment by Academic Year and Average by College

	FTIC Student Enrollment by Academic Year			
Institution	**2003**	**2004**	**2005**	**Average**
College A	1320	1263	1198	1260
College B	1316	1257	1308	1294
College C	1833	1780	1582	1732
College D	3348	3233	3064	3215

The percentages of first-time-in-college students who met (college-ready) or did not meet the state standard (underprepared) are presented in the data table below. Students who did not meet the state standard in all three areas were disaggregated by academic areas: mathematics, reading, and writing (Table 3.2).

Table 3.2: Average Percentage (2003-2005) of FTIC Student Enrollment by State Standard by College

	Percentage of FTIC Student Enrollment by State Standard			
	Met	**Did Not Meet**		
Institution	**All Areas**	**Mathematics**	**Reading**	**Writing**
College A	18.0	87.6	66.3	48.1
College B	29.4	88.5	50.7	45.3
College C	17.7	83.4	60.5	54.9
College D	24.8	83.7	58.3	48.4

First-time-in-college students who did not meet the state standard in mathematics are presented in the data table below (Table 3.3). The sample was disaggregated by

students who did not meet the state standard in all three areas (mathematics, reading, and writing) and by students who did not meet the state standard in mathematics (Table 3.3).

Table 3.3: Average Percentage (2003-2005) of FTIC Student Enrollment Below State Standard by College

	Percentage of FTIC Student Enrollment by State Standard	
	Did Not Meet State Standard	
Institution	**In All Areas**	**In Mathematics**
College A	28.4	71.6
College B	16.6	83.4
College C	31.2	68.8
College D	23.8	76.2

For Phase II, an online survey, the Developmental Education Program Survey (DEPS), acquired information regarding developmental education programs from each of the colleges. A nonrandom method was used in the selection of the respondents. Prior to the survey commencing, the chancellor and college presidents' were provided with information packets that included a notification letter, time requirements, proposal abstract, survey instructions, and a copy of the online survey questions. This researcher requested that each college provide one informant from each of the following categories: mathematics adjunct faculty member, mathematics faculty member, mathematics academic division chair/dean, academic affairs administrator, student services staff member, and a student services administrator. It was assumed that the sample of

respondents was knowledgeable of developmental education programs and developmental mathematics at their respective colleges based their job title and role.

The potential respondents were contacted by telephone to ascertain whether they were willing to participate in the online survey. If they were willing to participate, the respondent was emailed the web link to complete the online survey. They were informed that their names, and that of their colleges would remain anonymous, and their respondent's IP address would not be stored in the survey results.

The target sample size for the online survey was twenty-four. Twenty-two community college personnel completed the online survey that provided data on the colleges' developmental education programs specifically addressing developmental mathematics (Table 3.4).

Table 3.4: Target and Actual Sample Size of Respondents by College

Institution	Target Sample Size	Actual Sample Size
College A	6	5
College B	6	7
College C	6	5
College D	6	5

The gender of the total respondents comprised of nine females and thirteen males (Table 3.5).

Table 3.5: Gender of Respondents by College

Institution	Female	Male
College A	2	3
College B	3	4
College C	1	4
College D	3	2

Of the total respondents, four had less than five years experience at their college, ten had five to ten years experience, and nine had more than ten years experience (Table 3.6).

Table 3.6: Number of Years at College of Respondents by College

Institution	Less than 5 Years	5 Years to 10 Years	More than 10 Years
College A	1	2	2
College B	2	4	1
College C	1	2	2
College D	0	2	3

Of the total respondents, four identified themselves as a mathematics adjunct faculty member, four as a mathematics faculty member, four as a mathematics academic division chair/dean, four as a an academic affairs administrator, one as a student services staff member, and five as a student services administrator (Table 3.7).

Table 3.7: Role of Respondents by College

Institution	Mathematics Adjunct Faculty Member	Mathematics Faculty Member	Mathematics Academic Division Chair/Dean	Academic Affairs Administrator	Student Services Staff Member	Student Services Administrator
College A	1	1	1	1	0	1
College B	2	1	1	1	1	1
College C	1	1	1	1	0	1
College D	0	1	1	1	0	2

Procedures and Data Collection

Phase I analyzed state collected data of first-time-in-college students (FTIC) from 2003, 2004, and 2005 fall semesters, which was acquired through the Texas Higher Education Coordinating Board. Longitudinal data from the entering FTIC cohorts between 2003 and 2005 were disaggregated to examine differences. Research question one (Phase I), using descriptive statistics, determined what proportion of FTIC cohorts and sub-groups enrolled in developmental math coursework met the three academic outcomes and compared these cohorts to students who met the state standard (TSI obligation).

Research question two (Phase II) examined the responses to the Developmental Education Program Survey (DEPS) of college personnel from each of the four colleges. The survey was administered through a web-based system. The purpose of the survey was to identify developmental education program characteristics and practices at each UCCD college. Further examination of the survey data allowed for identification of differences in college developmental education programs. A limitation on the use of a

survey is that it relies on individual self-reporting, and therefore their perception and honesty which affects the validity of this study.

Instrument Development and Protocol

Phase I analyzed data collected from Texas community colleges by the designated state entity. These data were acquired through the Higher Education Accountability System that is maintained by the Texas Higher Education Coordinating Board (THECB) via an interactive data repository available through its website. The Higher Education Accountability System tracks student and institutional performance at Texas higher education institutions. These data are collected and presented in the form of Coordinating Board Management Reports (CBM). The CBM reports used for this study were the CBM001 and CBM002. The following provides reporting guidelines for the CBM reports that were used (THECB, 2009b):

> The CBM001 Student Report reflects all students enrolled in credit courses at the reporting institution as of the official census date, which is the 12th class day for the Fall and Spring semesters (16-week session) and the 4th class day for each of the summer terms (6-week session). Students must be registered by the official census date and they must be registered for one or more Coordinating Board approved course(s) for resident credit at the reporting institution whether the course is taught on-campus or off-campus (including instructional telecommunications). Students who withdraw from all classes on or before the official census date are not included.
>
> The CBM002 Student Report of the Texas Success Initiative (TSI) includes all undergraduate students attempting credit hours and any others required to be reported for Texas Success Initiative (TSI) purposes, including transfer students who are registered for one or more Coordinating Board approved courses during the reporting period and does not include students who withdraw prior to or on the official census date. This report includes students in credit certificate programs, but excludes students in continuing education programs.

For Phase I, two independent variables and four dependent variables were analyzed. The independent variables selected from the dataset were student characteristics: *first-time-in-college students* (met state standard and did not meet state standard); and *underprepared students* (who did not meet the state standard in all areas and did not meet the mathematics standard).

The dependent variables included *developmental mathematics course attempt, TSI obligation, mathematics college-level course attempt,* and *mathematics college-level course completion*. The variables scale of measurement was ratio.

Phase II collected data from the Developmental Education Program Survey (DEPS), modeled after the Community College Inventory (CCI) developed by McClenney and McClenney (2003) which focuses on student persistence, learning, and attainment, and expanded with a developmental education focus. The DEPS incorporates components of the CCI, but also incorporates practices that have shown to be critical in the creation of effective developmental education programs that strongly focus on student success and developmental education.

The Community College Inventory (CCI) is a tool used to determine to what extent community colleges have incorporated effective practices in the areas of student persistence, learning, and attainment. The CCI incorporates the works of Chickering and Gamson on teaching and learning; Kuh, and Pascarella and Terenzini on student engagement. Items are either paraphrased or drawn directly from the works of Byron McClenney and Kay McClenney (1988), Kay McClenney (2003), Cindy Miles and others

at the League for Innovation in the Community College (2000) and Renate Krakauer (2000).

The DEPS was adapted for online use. The survey contains 134 structured questions in a closed format. The survey was administered to each college through a web-based system. The structured questions were designed in a single-option variable, whereas respondents could only select from one item in each indicator.

For Phase II, three independent variables and 134 dependent variables were analyzed. The respondent information segment was presented in a dichotomous response format. The scale of measurement was nominal and ratio level. The independent variables included: *gender* (male vs. female), *years of experience at college* (less than 5 years, 5 years to 10 years, more than 10 years), and *job title* (mathematics adjunct faculty member, mathematics faculty member, mathematics academic division chair/dean, academic affairs administrator, student services staff member, student services administrator). The content questions were categorized into nine characteristics with indicators (dependent variables) presented as survey response items which describe each characteristic presented in an interval level response format. The nine characteristics and indicators are as shown in Table 3.8.

Table 3.8: Developmental Education Program Survey Characteristics and Number of Indicators

Characteristic	Number of Indicators/ Dependent Variables
Vision, Values, and Culture	8
The Culture of Evidence	29
Strategic Focus, Planning, and Resource Allocation	11
Leadership for Learning	7
The People of the College	9
Institutional Policies and Practices	12
Instructional Approaches and Practices	40
Student Support Practices	12
Grant Supported Programs	6

The response scale was adapted from Renate Krakauer, Criteria for a Learning College, 2000. The response scale was as follows:

1. No implementation. There is no evidence that this practice has been implemented in the institution.
2. Under discussion. This practice is being discussed or is in the planning stages.
3. Marginal implementation. There are isolated examples of this practice in the institution.
4. Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.
5. Full implementation. This practice has been fully implemented across the institution.

Approvals to access institutional personnel were acquired from the UCCD Chancellor and College Presidents' and through the Institutional Review Board (IRB) at The University of Texas at Austin.

Data Analysis

For Phase I and Phase II, descriptive statistical tests were used to determine differences between students and colleges based on student performance on academic outcomes (research question one), and the differences in effort level of colleges in the implementation of effective practices. According to Trochim (2001), "Descriptive statistics present quantitative descriptions in manageable form" (p. 268).

The Developmental Education Program Survey (DEPS) used in Phase II comprised of nine characteristics that described practices that are critical to creating an effective developmental education program. Each characteristic has indicators that strongly focus on student success and effective developmental education practices. Utilizing a Likert scale, with a one-to-four point weighted system, a "dashboard" system was developed to summarize the data findings based on the response median scores. The "Dashboard Effort Scale" system is represented in Figure 3.1 and the range of scores in Table 3.9. The Dashboard Effort Scale was used to determine to what degree colleges are implementing practices that are critical to creating an effective developmental education program.

Figure 3.1: Dashboard Effort Scale

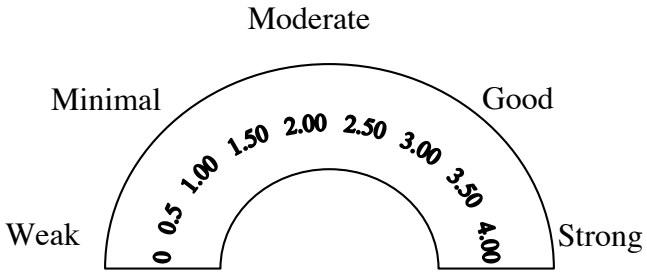


Table 3.9: Dashboard Effort Scale Range of Scores

Effort Level	Range
Weak	0-0.7
Minimal	0.8-1.5
Moderate	1.6-2.3
Good	2.4-3.1
Strong	3.2-4.0

Phase III utilized a comparative analysis of findings discovered in Phase I and II. The results in Phase I provided for the ranking of the UCCD colleges based on student performance of academic outcomes. The results in Phase II allowed for the comparison of effort levels found in each college. To rank the colleges on how each performed on the Developmental Education Program Survey; a total score based on the average of response scores for each characteristic was used for comparisons. The total score for each indicator was the summation of the respondents' ratings for all of items in each characteristic at each of the colleges.

Limitations

The use of a quantitative approach constituted the principle means of data analysis for this study. However, the limitations of quantitative methods posed constraints to the study by not allowing for deeper exploration of qualitative dimensions of developmental education programs through traditional qualitative processes such as focus groups or interviews. This researcher selected to use non-random purposive sampling in Phase II. More specifically, the use of expert sampling was used to assemble persons that are knowledgeable of the phenomenon being studied; developmental education practices and the implementation of practices within the UCCD colleges, thus posing a threat to

external validity. In addition, this researcher relied on informant's competency and reliability.

In addition, data acquired through the Texas Higher Education Coordinating Board to ascertain student performance of academic outcomes was limited in that it did not provide information on the depth of remediation needs of entering students.

Delimitations

Although developmental education aims to prepare students to become college proficient in the areas of mathematics, reading, and writing, this study only addressed developmental mathematics. This study focused on the community college setting versus a four-year university. In addition, this study examined individually accredited colleges in an urban multi-college community college district in Texas. The student data was strictly limited to students identified as first-time-in-college (FTIC).

Chapter Summary

This chapter provided a description of the methodology used in this study to determine if a relationship exists between student academic achievement and practices in developmental education programs of developmental mathematics students. This study will build upon the quantitative data to formulate conclusions based on the descriptions by those who are close to the phenomenon.

CHAPTER IV: DATA ANALYSIS AND FINDINGS

Introduction

This chapter provides in-depth descriptions of the data analysis and findings that serve to answer the research questions and hypothesis. In addition, the findings will guide the conclusions and recommendations for chapter five.

Analysis

Research question 1.

Research question one includes four sub-questions. To answer the first and second part of research question one, descriptive statistics were used to calculate the average number of FTIC students (fall 2003-05) who met the state standard in all areas (reading, writing, and mathematics) and measured against the average number of FTIC students who fell below the state standard (TSI) in mathematics (See Table 4.1). This information provided a context to the depth of mathematics remediation needs that are occurring at each college.

Table 4.1: Average FTIC Student Enrollment (2003-2005) by State Standard (TSI) by College

Institution	Total FTIC	# Met State Standards in All Areas	Percentage	# Below State Standard Mathematics	Percentage
College A	1260	227	18	905	87.6
College B	1294	380	29.4	809	88.5
College C	1732	307	17.7	1189	83.4
College D	3215	796	24.8	2024	83.7

The descriptive statistics demonstrated that College A had the lowest number of FTIC students who met the state standard in all areas at 18%, and College B had the highest number of FTIC students who met the state standard in all areas at 29.4%. Of the students who did not meet the state standard in all areas, College B had the highest percentage that required remediation in mathematics at 88.5%, as compared to College C who had the lowest percentage at 83.4%.

To answer the third part of research question one, descriptive statistics were used to calculate the average number and percentage of FTIC students (fall 2003-05) who did not meet the state standard in mathematics, who attempted developmental mathematics, and who attempted developmental mathematics and met the Texas Success Initiative (TSI) obligation in mathematics. Data were disaggregated by students who did not meet the state standards in all areas and by students who met the state standard in at least one area but not mathematics.

To answer the third sub-question of research question one descriptive statistics were used to calculate the proportion (average of fall 2003-05) of FTIC students who fell below the state standard in mathematics, and attempted developmental mathematics and met the Texas Success Initiative (TSI) obligation at each college over three years (Table 4.2).

Table 4.2: Average FTIC Student Enrollment (2003-2005) Who Did Not Meet Mathematics State Standard Who Attempted Developmental Mathematics and Met TSI Obligation

	Students Who Did Not Meet Mathematics State Standard		Percentage of Students Who Attempted Developmental Mathematics			Percentage of Students Who Met the TSI Obligation in Mathematics*		
	Number	**Percentage**	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
College A	905	87.6	87.3	89.0	89.9	3.1	14.6	21.0
College B	809	88.5	82.7	86.6	88.7	6.6	18.9	27.7
College C	1189	83.4	81.6	84.4	85.9	1.4	5.0	8.7
College D	2024	83.7	86.4	89.1	90.0	2.9	10.5	15.4

*Of students who attempted developmental mathematics

The descriptive statistics demonstrated that College A had the highest percentage of students attempt developmental mathematics in their first year at 87.3%, increasing by 2.6 percentage points by year three, as compared to College C who had the lowest participation at 81.6%, increasing by 4.3 percentage points by year three. College B had the highest increase of students attempting developmental mathematics over three years by 6.0 percentage points. Students at College D made moderate progress over a three-year period by 3.6 percentage points. Of the students who attempted developmental mathematics and met the TSI obligation in mathematics, College B had the highest percentage of students who completed the TSI obligation from year one to year three at 21 percentage points, followed by College A at 17.9, College D at 12.5, and College C at 7.3 percentage points.

Descriptive statistics were used to calculate the average number of FTIC students (fall 2003-05) who did not meet the state standard in mathematics at each college over a three-year period. In addition, the number of students who attempted developmental mathematics and met the Texas Success Initiative (TSI) obligation is presented. Also, presented is the total number of students who met the TSI obligation in mathematics (See Table 4.3). The data presented in the following table shows a different view of how colleges are performing on this measure. In addition, the value of actual numbers reminds us of the academic needs of entering students.

Table 4.3: Average FTIC Student Enrollment (2003-2005) Who Did Not Meet State Standard in Mathematics Who Met TSI Obligation

	Students Who Did Not Meet Mathematics State Standard	Students Who Met the TSI Obligation in Mathematics of Total			
	Number	Year 1	Year 2	Year 3	Year 3%
College A	905	27	121	177	19.6
College B	809	47	139	207	25.5
College C	1189	32	69	109	9.2
College D	2024	53	196	294	14.5

These data demonstrates that over a three-year period, College B had the highest number of students who met the TSI obligation at 207, or 25.5%. These data comprises the overall student enrollment that includes students who attempted developmental mathematics and students who did not meet the mathematics state standard.

Descriptive statistics were used to calculate the average number and percentage of FTIC students (fall 2003-05) who did not meet the state standard in all three areas

(mathematics, reading, and writing) at each college. In addition, the percentage of students who did not meet the state standard and attempted developmental mathematics is presented. Also, presented is the percentage of students who attempted developmental mathematics, and of that group, the percentage who met the Texas Success Initiative (TSI) obligation in mathematics over a three-year period (Table 4.4).

Table 4.4: Average FTIC Student Enrollment (2003-2005) Who Did Not Meet the State Standard in All Areas Who Attempted Developmental Mathematics and Met TSI Obligation

	Did Not Meet State Standard in All Areas		Percentage of Students Who Attempted Developmental Mathematics			Percentage of Students Who Met the TSI Obligation in Mathematics*		
	Number	Percentage	Percentage			Percentage		
			Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
College A	257	28.4	87.9	89.9	90.9	2.5	8.5	14.3
College B	135	16.6	79.8	82.9	83.9	2.6	9.8	18.2
College C	371	31.2	77.7	81.4	82.7	0.6	2.4	3.7
College D	481	23.8	84.6	88.1	89.1	1.9	6.4	9.4

*Of students who attempted developmental mathematics

The descriptive statistics demonstrated that College C had the highest number of students who did not meet the state standard in all three areas (mathematics, reading, and writing), at 31.2%, as compared to College B who had the lowest at 16.6%. Of this student group, College A and College D had the highest percentage of students to attempt a developmental mathematics course at entry and over a three-year period. College A had the highest percentage of students to attempt developmental mathematics in their first year at 87.9%, as compared to College C who had the lowest participation at 77.7%.

College B and College A had the highest increase of students who attempted developmental mathematics and meet the TSI Obligation within the first year by 2.6% and 2.5%, respectively. Of students who did not meet the state standard at entry and proceeded through developmental mathematics, College B had the highest percentage of students to meet the Texas Success Initiative (TSI) obligation over a three-year period. Over a three-year period, College B showed significant progress in its students meeting the TSI obligation at 18.2%.

Descriptive statistics were used to calculate the average number FTIC students (fall 2003-05) who did not meet the state standard in all areas at each college over a three-year period. In addition, the number of students who attempted developmental mathematics and met the Texas Success Initiative (TSI) obligation is presented. Also, presented is the total number of students who met the TSI obligation in mathematics (See Table 4.5). The data presented in the following table shows a different view of how colleges are performing on this measure.

Table 4.5: Average FTIC Student Enrollment (2003-2005) Who Did Not Meet State Standard in All Areas Who Met TSI Obligation

	Did Not Meet State Standard in All Areas	Students Who Met the TSI Obligation in Mathematics			
	Number	Year 1	Year 2	Year 3	% change over 3 years
College A	257	6	21	35	13.4
College B	135	4	12	12	16.0
College C	371	10	6	21	5.6
College D	481	8	28	41	8.6

These data demonstrates that over a three-year period, College B had the highest percentage of students who did not meet state standard in all areas meet the TSI obligation at 16%. These data comprises the overall student enrollment that includes students who attempted developmental mathematics and students who did not.

Descriptive statistics were used to calculate the average number and percentage of FTIC students (fall 2003-05) who met the state standard in at least one area but required developmental mathematics at each college. In addition, the percentage of students who met the state standard in at least one area and attempted developmental mathematics is presented. Also, presented is the percentage of students who attempted developmental mathematics, and of that group, the percentage who met the Texas Success Initiative (TSI) obligation in mathematics over a three-year period (Table 4.6).

Table 4.6: Average FTIC Student Enrollment (2003-2005) Who Met State Standard in At Least One Area but Not Mathematics Who Attempted Developmental Mathematics and Met TSI Obligation

	Met State Standard in at Least One Area but Not Mathematics*		Percentage of Students Who Attempted Developmental Mathematics			Percentage of Students Who Met the TSI Obligation in Mathematics**		
	Number	Percentage	Percentage			Percentage		
			Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
College A	648	71.6	87.7	88.7	89.6	3.4	17.1	23.9
College B	674	83.4	83.3	87.4	89.6	7.4	20.5	29.4
College C	818	68.8	83.4	85.8	87.3	1.7	6.1	10.8
College D	1543	76.2	86.9	89.4	90.3	3.3	11.7	17.3

* Met state standards in at least one area (reading, writing) but not in mathematics
**Of students who attempted developmental mathematics

These data demonstrates that College B had the highest percentage of students, 83.4%, who met the state standard in one area (reading, writing but not in mathematics, as compared to College C at 68.8%. Of this student group, College A and College D had the highest percentage of students to attempt a developmental mathematics course at entry and over a three-year period. Of the students who did not meet the state mathematics standard at entry and proceeded through developmental mathematics, College B and College A had the highest percentage of students to meet the Texas Success Initiative (TSI) obligation over a three-year period, with College B over twice the rate in the first year.

Descriptive statistics were used to calculate the average number FTIC students (fall 2003-05) who met the state standard in at least one area but not mathematics at each college over a three-year period. In addition, the number of students who attempted developmental mathematics and met the Texas Success Initiative (TSI) obligation, and the total number of students who met the TSI obligation in mathematics is presented (See Table 4.7). The data presented in the following table shows a different view of how colleges are performing on this measure.

Table 4.7: Average FTIC Student Enrollment (2003-2005) Who Met State Standard in At Least One Area but Not Mathematics Who Met TSI Obligation

	Met State Standard in At Least One Area but Not Mathematics	Number of Students who Met the TSI Obligation in Mathematics of Total			
	Number	**Year 1**	**Year 2**	**Year 3**	**Year 3%**
College A	648	21	101	144	22.2
College B	674	43	127	185	27.4
College C	818	22	53	87	10.7
College D	1543	44	168	253	16.4

These data demonstrate that over a three-year period, College B had the highest number of students (who did not meet the state standard in at least one area but not mathematics) who met the TSI obligation at 185, or 27.4%. These data comprise the overall student enrollment that includes students who attempted developmental mathematics and students who did not.

To answer the fourth and final part of research question one, which was to determine the proportion of FTIC students who took developmental mathematics, and attempted and successfully completed a mathematics college-level course with a grade of A, B, or C, descriptive statistics were used for the analysis. The data was aggregated by students who did not meet the state standard in mathematics; and disaggregated by students who did not meet the state standards in all areas and by students who met the state standard in at least one area but not mathematics.

Descriptive statistics were used to calculate the average number and percentage of FTIC students (fall 2003-05) that fell below the mathematics state standard and attempted a college-level course in mathematics at each college. Also, presented is the percentage of students who attempted a college-level course in mathematics, and of that group, the percentage who successfully completed a college-level mathematics course with a grade of A, B, or C over a three-year period (Table 4.8).

Table 4.8: Average FTIC Student Enrollment (2003-2005) Who Did Not Meet State Standard in Mathematics Who Attempted College-Level Mathematics Course and Successful Completion

	Students Below Mathematics State Standard		Percentage of Students Who Attempted Mathematics College-Level Course			Percentage of Students Who Completed College-Level Course (Grade A, B, C)		
	Number	Percentage	Percentage			Percentage		
			Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
College A	905	87.6	3.7	12.5	18.3	71.7	73.4	77.3
College B	809	88.5	5.0	21.3	30.0	78.2	79.1	81.9
College C	1189	83.4	1.3	5.2	8.5	68.1	71.7	72.1
College D	2024	83.7	1.7	7.5	12.6	41.0	59.4	65.7

These data demonstrate that College B had the highest percentage of students (5.0%) who attempted a college-level mathematics course in year one, and had significant increases from year two at 21.3% to year three at 30.0%. College C had the lowest percentage of students attempt a college-level mathematics course in year one at 1.3% to 8.5% in year three. Of this student group, College B also had the highest percentage of students who successfully completed a college-level mathematics course at 78.2% in year one, increasing to 81.9% by year three. College D had the lowest success rate of students

who successfully completed a college-level mathematics course at 41.0% in year one and 65.7% by year three.

Descriptive statistics were used to calculate the average number and percentage of FTIC students (fall 2003-05) that did not meet the state standard in all areas and attempted a college-level course in mathematics at each college. Also, presented is the percentage of students who attempted a college-level course in mathematics, and of that group, the percentage who successfully completed a college-level mathematics course with a grade of A, B, or C over a three-year period (Table 4.9).

Table 4.9: Average FTIC Student Enrollment (2003-2005) Who Did Not Meet State Standard in All Areas Who Attempted College-Level Mathematics Course and Successful Completion

	Did Not Meet State Standard in All Areas*		Percentage of Students Who Attempted College-Level Course			Percentage of Students Who Completed College-Level Course (Grade A, B, C)		
	Number	Percentage	Percentage			Percentage		
			Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
College A	257	28.4	1.7	7.2	11.7	40.0	68.2	73.3
College B	135	16.6	2.5	11.9	15.7	62.5	69.5	72.7
College C	371	31.2	0.3	1.4	3.7	66.7	58.9	61.5
College D	481	23.8	0.6	3.0	6.1	50.0	58.4	58.9

* Did not meet state standard in mathematics, reading and writing

These data demonstrates that College B had the highest percentage of students at 2.5%, who attempted a college-level mathematics course in year one, and had significant increases from year two at 11.9% to year three at 15.7%. College C had the lowest percentage of students attempt a college-level mathematics course in year one at 0.3% to 3.7% in year three. Of this student group, College C had the highest percentage of

students who successfully completed a college-level mathematics course at 66.7% in year one, but also showed declines in year two at 58.9% and 61.5% by year three. College B has the second highest percentage of students who successfully completed a college-level mathematics course at 62.5% that increased to 69.5% in year two to 72.7% by year three.

Descriptive statistics were used to calculate the average number and percentage of FTIC students (fall 2003-05) that did not meet the state standard in all areas and attempted a college-level course in mathematics at each college. Also, presented is the percentage of students who attempted a college-level course in mathematics, and of that group, the percentage who successfully completed a college-level mathematics course with a grade of A, B, or C over a three-year period (Table 4.10).

Table 4.10: Average FTIC Student Enrollment (2003-2005) Who Met State Standard in at Least One Area but Not Mathematics Who Attempted College-Level Mathematics Course and Successful Completion

	Met State Standard in at Least One Area but Not Mathematics		Percentage of Students Who Attempted College-Level Mathematics Course			Percentage of Students Who Completed College-Level Course (Grade A, B, C)		
	Number	Percentage	Percentage			Percentage		
			Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
College A	648	71.6	4.4	14.8	21.0	67.5	68.1	72.2
College B	674	83.4	5.5	23.2	32.8	76.2	76.9	80.2
College C	818	68.8	1.7	6.9	10.6	63.8	68.0	67.3
College D	1543	76.2	2.1	8.9	14.6	36.7	55.2	61.2

These data demonstrate that College B had the highest percentage of students, 5.5%, who attempted a college-level mathematics course in year one, and had significant increases from year two at 23.2% to year three at 32.8%. College C had the lowest

percentage of students attempt a college-level mathematics course in year one at 1.7% to 10.6% in year three. Of this student group, College B had the highest percentage of students who successfully completed a college-level mathematics course at 76.2% in year one, which increased to 76.9% in year two to 80.2% by year three.

Descriptive statistics were used to calculate the percentage of FTIC students (fall 2003-05) that attempted and successfully completed a college-level mathematics course by students that met the state standard in all areas and those that did not meet the state standard (Table 4.11).

Table 4.11: Average FTIC Student Enrollment (2003-2005) Who Met and Did Not Meet State Standard by College-Level Mathematics Attempt and Successful Course Completion

	Met State Standard in All Areas		**Not Met State Standard in Mathematics by College-Level Mathematics Course Attempt and Completion**					
	Year 1		**Year 1**		**Year 2**		**Year 3**	
	Percentage		**Percentage**		**Percentage**		**Percentage**	
	Attempted	Completed	Attempted	Completed	Attempted	Completed	Attempted	Completed
College A	42.7	67.2	3.7	71.7	12.5	73.4	18.3	77.3
College B	43.9	84.3	5.0	78.2	21.3	79.1	30.0	81.9
College C	22.5	71.2	1.3	41.0	5.2	59.4	8.5	65.7
College D	33.8	52.4	1.7	41.0	7.5	59.4	12.6	65.7

These data demonstrates that College B had the highest percentage of students who met the state standard in all areas that attempted a college-level mathematics course at 43.9%, and successfully completed a college-level mathematics course in year one at 84.3%. College B also had the highest percentage of students who did not meet the state

standard that attempted a college-level mathematics course at 5.0 in the first year and 30.0 at year three. College B also had the highest percentage of students who entered underprepared in mathematics (did not meet the state standard in mathematics) and successfully complete college-level mathematics course over a course of three years. Unfortunately, it took three years for 30.0% of the students who were "underprepared" in mathematics to attempt, and of that group, only 81.0% successfully completed college-level mathematics. Students at other colleges fared much worse. College C had the lowest percentage of both groups, the college ready and underprepared, who attempted and successfully completed a college-level mathematics course.

Based on the previous data, college-ready and underprepared students, who attended College B between the academic years of 2003-2005, had better success rates than their peers within the same period at other UCCD colleges. For the underprepared student, success on sequential academic outcomes, 1) meeting the TSI obligation and; 2) successful completion of a college-level mathematics course, was a time-intensive journey. Most disturbing was that at each academic outcome point, a high percentage of underprepared students did not continue. Based on the FTIC average enrollment from 2003-2005, College B had 5.0%, or 40 underprepared students, attempt a college-level course by year one and 30.0%, or 243 underprepared students, by year three. At the lowest performing college, College C, only 1.3%, or 15 underprepared students, attempted a college-level course by year one and 8.5%, or 101 underprepared students, by year three.

Of the limited number of underprepared students who attempted a college-level mathematics course, College B had the highest percentage of students to successfully pass the course with a grade of A, B, or C at 78.2% for year one, increasing to 81.9% by year three.

Based on the previous data, the underprepared students from College B performed better on the academic outcomes that indicate college readiness and preparedness. For ranking the colleges on student performance, the group of students who did not meet the state standards in mathematics was used. This aggregate includes students who did not meet the state standard in all three areas and those that met the state standard in one or more area but not in mathematics. The following tables provide the statistics that determined college ranking. Descriptive statistics were used to determine student performance on academic outcomes that indicate college readiness (TSI obligation in mathematics) and preparedness (college-level mathematics course) over a three-year period by college (See Table 4.12). To determine college readiness in mathematics, the TSI obligation in mathematics was used: (1) meeting the TSI mathematics obligation by students who attempted developmental mathematics; and (2) meeting the TSI mathematics obligation by total average enrollment (2003-2005). To determine college preparedness in mathematics, the completion of college-level mathematics course was used, which included students who did and did not take developmental mathematics.

Table 4.12: Percentage of Students (2003-2005) Who Did Not Meet the Mathematics State Standard Who Met the Academic Outcomes Over Three Years

	Students Who Attempted Developmental Mathematics and Met the TSI Obligation in Mathematics			Percentage of Students Who Met the TSI Obligation in Mathematics of Total			Percentage of Students Who Completed College-Level Mathematics Course (Grade A, B, C) of Total		
				Percentage			Percentage		
	Year 1	Year 3	% diff.	Year 1	Year 3	% diff.	Year 1	Year 3	% diff.
College A	3.1	21.0	17.9	3.0	19.6	16.6	2.7	14.2	11.5
College B	6.6	27.7	21.1	5.9	25.5	19.6	3.8	24.6	20.8
College C	1.4	8.7	7.3	2.7	9.2	6.5	0.8	6.2	5.4
College D	2.9	15.4	12.5	2.6	14.5	11.9	0.7	8.3	7.6

These data demonstrates that students from College B performed better on the academic outcomes than students from other colleges in their first year and over the course of three years. The following table (Table 4.13) displays the percentage difference on each academic outcome and the averaged percentage.

Table 4.13: Overall Ranking of Colleges Based on Percentage Differences of Students (2003-2005) Who Did Not Meet the Mathematics State Standard by Academic Outcomes Over Three Years

	Students Who Met the TSI Obligation in Mathematics Who Attempted Developmental Mathematics	Percentage of Students Who Met the TSI Obligation in Mathematics of Total	Percentage of Students Who Completed College-Level Course (Grade A, B, C) of Total	Average of Differences
	% diff.	% diff.	% diff.	% diff.
College A	17.9	16.6	11.5	15.3
College B	21.1	19.6	20.8	20.5
College C	7.3	6.5	5.4	6.4
College D	12.5	11.9	7.6	10.6

These data demonstrate that underprepared students in mathematics attending College B were more likely to meet the TSI obligation in mathematics and successfully pass a college-level mathematics course than other students attending the remaining UCCD colleges. Based on the findings the college rankings are as follows:

1. College B
2. College A
3. College D
4. College C

Research question 2.

Research question two set out to identify distinguishing characteristics between the UCCD developmental education programs. These characteristics comprise of practices that are critical to creating an effective developmental education agenda. This was accomplished by evaluating responses from college faculty/staff to the Developmental Education Survey on each characteristic. Within each characteristic are a series of indicators that strongly focus on student success and developmental education. The Dashboard Effort Scale, described in Chapter III, was used to determine to what degree of effort are colleges implementing practices that are critical to creating an effective developmental education program (See Figure 3.1).

Vision, values, and culture.

The Vision, Values, and Culture characteristic is comprised of eight indicators. These indicators describe how the college community perceives developmental education. This is exemplified by the inclusion of developmental education in the college

culture, the explicit and public commitment made by the college, the development of a strong culture of evidence, a sense of urgency to improve programs, and a collective sense of responsibility for improving developmental education.

Based on the survey responses, College A has made a good effort overall in the implementation of effective practices (Table 4.14).

Table 4.14: College A-Vision, Values, and Culture

College A Vision, Values, and Culture		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The college has clearly defined its mission, values, and vision, with a central focus on learning, persistence, and attainment of students enrolled in developmental education.	0	0	0	2	3	5	18	3.60
2	There exists a shared sense of mission, values, and vision held by individuals and groups across the college community that developmental education is an important issue.	0	0	0	1	4	5	19	3.80
3	In this institution, there exists a sense of urgency in identifying solutions to improve developmental education.	0	0	0	2	3	5	18	3.60
4	The institution has made an explicit, public commitment to achieve equity in student learning, persistence, and attainment.	0	0	0	2	2	4	14	3.50
5	In pursuit of its mission, the institution has developed a strong culture of evidence as a basis for improving developmental education.	0	0	0	3	1	4	13	3.25
6	The institution promotes and supports broad engagement of the COLLEGE COMMUNITY in processes for planning and priority setting in its developmental education programming.	0	0	0	3	1	4	13	3.25
7	The institution promotes and supports broad engagement of the BROADER COMMUNITY in processes for planning and priority setting in its developmental education programming.	0	0	1	3	0	4	11	2.75
8	Individuals and groups within the institution have a collective sense of responsibility for improving learning, persistence, and attainment levels of students enrolled in developmental education.	0	0	0	2	3	5	18	3.60

Survey responses indicate that College A has moved toward the full implementation of exhibiting a shared sense of mission, values, and vision that developmental education is an important issue. The following practices are in partial to full implementation: the development of a clearly defined mission value and vision centrally focused on developmental education; a sense of urgency in seeking solutions to improve developmental education; the effort of the institution to publicly commit to equity achievement; and in the development of a strong culture of evidence. Partial to full implementation is being made in the engagement of the college community in planning and priority setting of developmental education programming but less so in the engagement of the broader community as indicated by the lower response score for indicator #7.

Based on the survey responses, College B has made a strong effort overall in the implementation of effective practices (Table 4.15).

Table 4.15: College B-Vision, Values, and Culture

College B Vision, Values, and Culture		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The college has clearly defined its mission, values, and vision, with a central focus on learning, persistence, and attainment of students enrolled in developmental education.	0	0	0	1	6	7	27	3.86
2	There exists a shared sense of mission, values, and vision held by individuals and groups across the college community that developmental education is an important issue.	0	0	0	1	6	7	27	3.86
3	In this institution, there exists a sense of urgency in identifying solutions to improve developmental education.	0	0	0	0	7	7	28	4.00
4	The institution has made an explicit, public commitment to achieve equity in student learning, persistence, and attainment.	0	0	0	0	6	6	24	4.00
5	In pursuit of its mission, the institution has developed a strong culture of evidence as a	0	0	0	0	6	6	24	4.00

	basis for improving developmental education.								
6	The institution promotes and supports broad engagement of the COLLEGE COMMUNITY in processes for planning and priority setting in its developmental education programming.	0	0	0	2	4	6	22	3.67
7	The institution promotes and supports broad engagement of the BROADER COMMUNITY in processes for planning and priority setting in its developmental education programming.	1	0	0	2	3	6	18	3.00
8	Individuals and groups within the institution have a collective sense of responsibility for improving learning, persistence, and attainment levels of students enrolled in developmental education.	0	0	0	1	5	6	23	3.83

Survey responses indicate that College B has moved toward the full implementation of the majority of effective practices that indicates the college has a strong developmental education agenda. The institution exhibits its commitment by the inclusion of developmental education in its mission, values, and vision; a sense of urgency and a collective sense of responsibility exist; the college has made an explicit, public commitment to achieve equity; and the college has developed a strong culture of evidence. Partial to full implementation is being made in the engagement of the college community in planning and priority setting of developmental education programming but less so in the engagement of the broader community as indicated by the low response score for indicator #7.

Based on the survey responses, College C has made a good effort overall in the implementation of effective practices (Table 4.16).

Table 4.16: College C-Vision, Values, and Culture

College C Vision, Values, and Culture		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The college has clearly defined its mission, values, and vision, with a central focus on learning, persistence, and attainment of students enrolled in developmental education.	0	1	0	2	2	5	15	3.00
2	There exists a shared sense of mission, values, and vision held by individuals and groups across the college community that developmental education is an important issue.	0	1	0	2	2	5	15	3.00
3	In this institution, there exists a sense of urgency in identifying solutions to improve developmental education.	0	1	1	1	2	5	14	2.80
4	The institution has made an explicit, public commitment to achieve equity in student learning, persistence, and attainment.	0	1	1	0	3	5	15	3.00
5	In pursuit of its mission, the institution has developed a strong culture of evidence as a basis for improving developmental education.	0	1	1	0	2	4	11	2.75
6	The institution promotes and supports broad engagement of the COLLEGE COMMUNITY in processes for planning and priority setting in its developmental education programming.	1	1	0	0	3	5	13	2.60
7	The institution promotes and supports broad engagement of the BROADER COMMUNITY in processes for planning and priority setting in its developmental education programming.	1	1	0	2	1	5	11	2.20
8	Individuals and groups within the institution have a collective sense of responsibility for improving learning, persistence, and attainment levels of students enrolled in developmental education.	0	1	0	2	2	5	15	3.00

Survey responses indicate a lack of clear implementation patterns at College C on the all indicators. Responses range from no implementation to full implementation. Four indicators had the highest response rate at 3.00. This indicates that the college is making a good effort towards the establishment of clearly defined mission, values, and vision that focuses on developmental education; the existence of a shared sense of mission, values, and vision that developmental education is an important issue; the effort of the institution

to publicly commit to equity achievement; and collective sense of responsibility. The indicators with the lowest response scores addressed the engagement of the "college community and the "broader community" in planning and priority setting of developmental education programming.

Based on the survey responses, College D has made a moderate effort overall in the implementation of effective practices (Table 4.17).

Table 4.17: College D-Vision, Values, and Culture

College D Vision, Values, and Culture		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The college has clearly defined its mission, values, and vision, with a central focus on learning, persistence, and attainment of students enrolled in developmental education.	0	0	2	3	0	5	13	2.60
2	There exists a shared sense of mission, values, and vision held by individuals and groups across the college community that developmental education is an important issue.	0	2	0	2	1	5	12	2.40
3	In this institution, there exists a sense of urgency in identifying solutions to improve developmental education.	0	2	0	1	2	5	13	2.60
4	The institution has made an explicit, public commitment to achieve equity in student learning, persistence, and attainment.	1	1	1	1	1	5	10	2.00
5	In pursuit of its mission, the institution has developed a strong culture of evidence as a basis for improving developmental education.	0	1	2	1	1	5	12	2.40
6	The institution promotes and supports broad engagement of the COLLEGE COMMUNITY in processes for planning and priority setting in its developmental education programming.	1	1	0	2	1	5	11	2.20
7	The institution promotes and supports broad engagement of the BROADER COMMUNITY in processes for planning and priority setting in its developmental education programming.	2	1	1	1	0	5	6	1.20
8	Individuals and groups within the institution have a collective sense of responsibility for improving learning, persistence, and attainment levels of students enrolled in developmental education.	0	1	2	2	0	5	11	2.20

Survey responses indicate that College D has made little effort in fully implementing effective practices on its campus. The majority of responses fell between under discussion and partial implementation. Two indicators, #1 and #3 at 2.60, had the highest scores. These indicators pertained to the establishment of clearly defined mission, values, and vision that focuses on developmental education and the existence of a shared sense of urgency. The indicator with the lowest response scores of 1.20 pertained to the engagement of the "broader community" in planning and priority setting of developmental education programming.

These data demonstrates that two colleges, College A and College B have made a strong effort in the implementation of effective practices in the vision, values, and culture characteristic. College C is making good effort toward the implementation of effective practices, with College D making a moderate effort toward implementation of effective practices (Table 4.18).

Table 4.18: Vision, Values, and Culture-Ranking of Colleges by Response Mean Scores

Ranking Level		**1**	**2**	**3**	**4**	**Response Mean Score by Indicator**
College		College B	College A	College C	College D	
1	The college has clearly defined its mission, values, and vision, with a central focus on learning, persistence, and attainment of students enrolled in developmental education.	3.86	3.60	3.00	2.60	**3.27**
2	There exists a shared sense of mission, values, and vision held by individuals and groups across the college community that developmental education is an important issue.	3.86	3.80	3.00	2.40	**3.27**
3	In this institution, there exists a sense of urgency in identifying solutions to improve developmental education.	4.00	3.60	2.80	2.60	**3.25**
4	The institution has made an explicit, public commitment to achieve equity in student learning, persistence, and attainment.	4.00	3.50	3.00	2.00	**3.13**
5	In pursuit of its mission, the institution has developed a strong culture of evidence as a basis for improving developmental education.	4.00	3.25	2.75	2.40	**3.10**
6	The institution promotes and supports broad engagement of the COLLEGE COMMUNITY in processes for planning and priority setting in its developmental education programming.	3.67	3.25	2.60	2.20	**2.93**
7	The institution promotes and supports broad engagement of the BROADER COMMUNITY in processes for planning and priority setting in its developmental education programming.	3.00	2.75	2.20	1.20	**2.29**
8	Individuals and groups within the institution have a collective sense of responsibility for improving learning, persistence, and attainment levels of students enrolled in developmental education.	3.83	3.60	3.00	2.20	**3.16**
	Response Mean Scores by College	**3.78**	**3.42**	**2.79**	**2.20**	

The highest response mean scores (by indicator) for all the colleges were for indicators #1, #2, and #3. These indicators correspond to how the college instills the importance of developmental education. This was done through a clearly defined mission, values, and vision; the existence of a shared sense of mission, values, and vision held by individuals and groups across the college community that developmental

education is an important issue; and there exists a sense of urgency in identifying solutions to improve developmental education.

The lowest response mean scores (by indicator) for all the colleges were indicators #6 and #7 which correspond with engagement efforts of both internal and external communities in the planning and priority-setting of developmental education programs. Engagement with the "broader" community had the lowest response score across the board that indicates that the colleges are having difficulty moving beyond their institutional base and opening dialogue with external stakeholders.

The culture of evidence.

The Culture of Evidence characteristic is comprised of twenty-nine indicators. An institutional environment that does not fear facing the "brutal facts" supports a strong culture of evidence. The institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss institutional and student performance. Data is rigorously examined, shared, and discussed with all stakeholders. The institution regularly assesses its performance and progress in implementing educational practices, which evidence shows, will contribute to higher rates of learning, persistence, and attainment for students in developmental education. Beliefs and assertions about "what works" in promoting student learning, persistence, and attainment are evidenced-based.

Based on the survey responses, College A has made a strong effort overall in the implementation of effective practices (Table 4.19).

Table 4.19: College A-The Culture of Evidence

College A The Culture of Evidence		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional research and information systems provide systematic, timely, useful, and user-friendly information about learning, persistence, and attainment levels of students in developmental education.	0	0	1	3	0	4	11	2.75
2	The institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss…persistence of developmental education students	0	0	0	3	1	4	13	3.25
3	…developmental education course completion	0	0	0	3	1	4	13	3.25
4	…developmental education level/sequence completion	0	0	0	3	1	4	13	3.25
5	…developmental education student performance in subsequent gatekeeper courses	0	0	0	3	1	4	13	3.25
6	…developmental education student attainment of certificate, degrees, and/or transfer	0	0	0	3	1	4	13	3.25
7	The institution is committed to cohort tracking of entering students to determine rates of learning, persistence, and attainment and to identify areas for improvement in developmental education.	0	0	2	1	1	4	11	2.75
8	The institution regularly collects, analyzes, and reports data pertaining to the following… successful completion of remedial/developmental courses (C or better)	0	0	0	2	3	5	18	3.60
9	…successful completion of remedial/developmental levels/sequence	0	0	0	2	2	4	14	3.50
10	…successful completion of gatekeeper mathematics courses (C or better)	0	0	0	1	4	5	19	3.80
11	…student persistence/re-enrollment from one term to the next	0	0	0	1	3	4	15	3.75
12	…student persistence/re-enrollment from one year to the next	0	0	0	1	3	4	15	3.75
13	…completion of certificates and/or degrees	0	0	0		4	4	16	4.00
14	…transfer rates	0	0	0	2	3	5	18	3.60
15	…academic performance comparisons between student groups (developmental education and college-ready)	0	0	0	3	1	4	13	3.25
16	Data depicting student persistence, learning, and attainment are routinely disaggregated and reported by student characteristics including…gender	0	0	1	1	2	4	13	3.25
17	...race/ethnicity	0	0	1	2	1	4	12	3.00
18	…income level	0	0	1	2	1	4	12	3.00
19	…full-time/part-time status	0	0	1	1	2	4	13	3.25
20	…residency code/zip code	0	0	1	1	2	4	13	3.25
21	…high school attended	0	0	2	0	2	4	12	3.00

22	…academic preparedness (GPA, TAKS, coursework)	0	1	1	1	1	4	10	2.50
23	…college placement tests (THEA, Accuplacer, etc.)	0	1	0	2	1	4	11	2.75
24	The institution regularly assesses its performance and progress in implementing educational practices, which evidence shows, will contribute to higher rates of learning, persistence, and attainment for students in developmental education.	0	0	0	3	1	4	13	3.25
25	The results of student and institutional assessments are used routinely to inform institutional decisions regarding...strategic priorities	0	0	1	2	2	5	16	3.20
26	...resource allocation	0	1	0	2	2	5	15	3.00
27	...faculty and staff development	0	0	1	2	2	5	16	3.20
28	...improvements in programs and services for learners	0	0	1	2	2	5	16	3.20
29	Beliefs and assertions about "what works" in promoting student learning, persistence, and attainment are evidenced-based.	0	0	1	2	1	4	12	3.00

College A is making a strong effort towards establishing a culture of evidence that includes developmental education. The majority of responses report that effective practices are being partially implemented. According to the responses, the college is partially implementing rigorous examination and open discussion the performance of developmental education students. The collection, analyses, and reporting on critical academic measures that specifically focus on success outcomes of the developmental education student and the disaggregation on student characteristics are in partial to full implementation. The use of student and institutional assessments to inform decisions regarding strategic priorities, resource allocation, faculty and staff development, and program and service improvement are in partial to full implementation.

The indicators with the lowest response scores were #1, #7, #24 at 2.75 and #22 at 2.50. Survey items #1 and #7 describes the reporting by institutional research and information systems on performance measures specifically tied to developmental

education and the use of cohort tracking to identify areas for improvement. The college has taken steps of disaggregating data based on student characteristics such as gender and race/ethnicity; but does disaggregate data based on students' academic background and preparedness to the same degree.

Based on the survey responses, College B is making a strong effort overall in the implementation of effectiveness practices (Table 4.20).

Table 4.20: College B-The Culture of Evidence

College B The Culture of Evidence		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional research and information systems provide systematic, timely, useful, and user-friendly information about learning, persistence, and attainment levels of students in developmental education.	0	0	2	2	3	7	22	3.14
2	The institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss…persistence of developmental education students	0	0	0	1	5	6	23	3.83
3	…developmental education course completion	0	0	0	1	5	6	23	3.83
4	…developmental education level/sequence completion	0	0	0	1	5	6	23	3.83
5	…developmental education student performance in subsequent gatekeeper courses	0	0	0	0	6	6	24	4.00
6	…developmental education student attainment of certificate, degrees, and/or transfer	0	0	0	1	5	6	23	3.83
7	The institution is committed to cohort tracking of entering students to determine rates of learning, persistence, and attainment and to identify areas for improvement in developmental education.	0	0	0	1	5	6	23	3.83
8	The institution regularly collects, analyzes, and reports data pertaining to the following… successful completion of remedial/developmental courses (C or better)	0	0	0	0	6	6	24	4.00
9	…successful completion of remedial/developmental levels/sequence	0	0	0	0	6	6	24	4.00
10	…successful completion of gatekeeper mathematics courses (C or better)	0	0	0	0	6	6	24	4.00
11	…student persistence/re-enrollment from one term to the next	0	0	0	0	6	6	24	4.00

12	…student persistence/re-enrollment from one year to the next	0	0	0		6	6	24	4.00
13	…completion of certificates and/or degrees	0	0	0	2	4	6	22	3.67
14	…transfer rates	0	0	1	1	4	6	21	3.50
15	…academic performance comparisons between student groups (developmental education and college-ready)	0	0	0	2	4	6	22	3.67
16	Data depicting student persistence, learning, and attainment are routinely disaggregated and reported by student characteristics including…gender	0	0	1	1	4	6	21	3.50
17	…race/ethnicity	0	0	0	1	5	6	23	3.83
18	…income level	2	0	0	0	4	6	16	2.67
19	…full-time/part-time status		0	0	1	5	6	23	3.83
20	…residency code/zip code	2	0	0	1	3	6	15	2.50
21	…high school attended	2	0	0	1	3	6	15	2.50
22	…academic preparedness (GPA, TAKS, coursework)	0	0	1	2	3	6	20	3.33
23	…college placement tests (THEA, Accuplacer, etc.)	1	0	0	2	3	6	18	3.00
24	The institution regularly assesses its performance and progress in implementing educational practices, which evidence shows, will contribute to higher rates of learning, persistence, and attainment for students in developmental education.	0	0	0	1	6	7	27	3.86
25	The results of student and institutional assessments are used routinely to inform institutional decisions regarding...strategic priorities	1	0	0	0	5	6	20	3.33
26	...resource allocation	1	0	0	0	5	6	20	3.33
27	...faculty and staff development	1	0	0	0	5	6	20	3.33
28	...improvements in programs and services for learners	1	0	0	0	5	6	20	3.33
29	Beliefs and assertions about "what works" in promoting student learning, persistence, and attainment are evidenced-based.	0	0	0	2	5	7	26	3.71

College B is moving toward full implementation of promoting rigorous examination and open discussion of academic performance measures of developmental education students with the college community. The college is fully implementing data collection, analysis, and reporting of critical academic measures that specifically focus on success outcomes of the developmental education student such as successful completion of developmental courses and sequence, degree/certificate completion, transfer and

persistence rates. College B also reports that data is routinely disaggregated by student characteristics such as gender, race/ethnicity, full-time/part-time status, and academic background and preparedness, but it does not disaggregate socio-economic variables (income level, residency/zip code, high school attended) to the same degree. The majority of responses report full implementation for the indicators that pertain to the use of student and institutional assessment to inform decision-making. College B makes a strong effort in utilizing evidenced-based research to guide beliefs and assertions about "what works" in promoting student learning, persistence, and attainment. The responses report that institutional research and information systems provision of systematic, timely, useful, and user-friendly information about learning, persistence, and attainment levels of students in developmental education is not occurring on a consistent basis.

Based on the survey responses, College C is making a moderate effort overall in the implementation of effective practices (Table 4.21).

Table 4.21: College C-The Culture of Evidence

College C The Culture of Evidence		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional research and information systems provide systematic, timely, useful, and user-friendly information about learning, persistence, and attainment levels of students in developmental education.	0	1	1	1	2	5	14	2.80
2	The institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss…persistence of developmental education students	1	1	0	0	3	5	13	2.60
3	…developmental education course completion	0	1	0	1	3	5	16	3.20
4	…developmental education level/sequence completion	0	1	1	0	3	5	15	3.00

5	…developmental education student performance in subsequent gatekeeper courses	1	1	0	1	2	5	12	2.40
6	…developmental education student attainment of certificate, degrees, and/or transfer	0	2	0	1	2	5	13	2.60
7	The institution is committed to cohort tracking of entering students to determine rates of learning, persistence, and attainment and to identify areas for improvement in developmental education.	1	1	0	1	2	5	12	2.40
8	The institution regularly collects, analyzes, and reports data pertaining to the following… successful completion of remedial/developmental courses (C or better)	0	1	0	0	4	5	17	3.40
9	…successful completion of remedial/developmental levels/sequence	0	1	1	0	3	5	15	3.00
10	…successful completion of gatekeeper mathematics courses (C or better)	1	1	0	0	3	5	13	2.60
11	…student persistence/re-enrollment from one term to the next	1	1	0	0	3	5	13	2.60
12	…student persistence/re-enrollment from one year to the next	1	1	0	0	3	5	13	2.60
13	…completion of certificates and/or degrees	0	1	1	0	3	5	15	3.00
14	…transfer rates	0	1	1	1	2	5	14	2.80
15	…academic performance comparisons between student groups (developmental education and college-ready)	1	1	0	0	3	5	13	2.60
16	Data depicting student persistence, learning, and attainment are routinely disaggregated and reported by student characteristics including…gender	2	0	0	0	3	5	12	2.40
17	race/ethnicity	0	1	1	0	3	5	15	3.00
18	income level	2	0	1	1	1	5	9	1.80
19	full-time/part-time status	1	1	0	2	1	5	11	2.20
20	residency code/zip code	1	1	0	2	1	5	11	2.20
21	high school attended	2	0	2	0	1	5	8	1.60
22	academic preparedness (GPA, TAKS, coursework)	1	1	2	0	1	5	9	1.80
23	college placement tests (THEA, Accuplacer, etc.)	1	1	0	1	2	5	12	2.40
24	The institution regularly assesses its performance and progress in implementing educational practices, which evidence shows, will contribute to higher rates of learning, persistence, and attainment for students in developmental education.	1	1	0	1	1	4	8	2.00

25	The results of student and institutional assessments are used routinely to inform institutional decisions regarding...strategic priorities	0	2	0	2	1	5	12	2.40
26	...resource allocation	1	1	0	2	1	5	11	2.20
27	...faculty and staff development	0	1	1	2	1	5	13	2.60
28	...improvements in programs and services for learners	0	1	0	2	2	5	15	3.00
29	Beliefs and assertions about "what works" in promoting student learning, persistence, and attainment are evidenced-based.	1	1	0	2	1	5	11	2.20

Survey responses indicate a lack of clear implementation patterns at College C on all indicators. Responses range from no implementation to full implementation. Four indicators had the highest response rate at 3.00. The majority of responses fall in the partial to full implementation categories. College C is making a good effort in promoting rigorous examination and open discussion of academic performance measures of developmental education students with the internal college community. The institutional research and information systems are providing effective reporting on performance measures and utilize data collected from cohort tracking to identify areas for improvement. College C is also making a good effort in the collection, analysis, and reporting of critical academic measures that specifically focus on success outcomes of the developmental education student such as successful completion of developmental courses and sequence, degree/certificate completion, transfer and persistence rates. College C also reports that data is routinely disaggregated by student characteristics such as gender, race/ethnicity, full-time/part-time status, and academic background and preparedness, but it does not disaggregate socio-economic variables (income level, residency/zip code, high school attended) to the same degree.

Based on the survey responses, College D is making a moderate effort overall in the implementation of effective practices (Table 4.22).

Table 4.22: College D-The Culture of Evidence

College D The Culture of Evidence		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional research and information systems provide systematic, timely, useful, and user-friendly information about learning, persistence, and attainment levels of students in developmental education.	0	0	3	1	1	5	13	2.60
2	The institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss…persistence of developmental education students	0	2	0	0	3	5	14	2.80
3	…developmental education course completion	0	2	0	0	3	5	14	2.80
4	…developmental education level/sequence completion	0	1	1	0	2	4	11	2.75
5	…developmental education student performance in subsequent gatekeeper courses	0	1	1	0	2	4	11	2.75
6	…developmental education student attainment of certificate, degrees, and/or transfer	0	2	0	1	2	5	13	2.60
7	The institution is committed to cohort tracking of entering students to determine rates of learning, persistence, and attainment and to identify areas for improvement in developmental education.	1	0	1	2	1	5	12	2.40
8	The institution regularly collects, analyzes, and reports data pertaining to the following… successful completion of remedial/developmental courses (C or better)	0	1	1	0	3	5	15	3.00
9	…successful completion of remedial/developmental levels/sequence	0	1	1	0	3	5	15	3.00
10	…successful completion of gatekeeper mathematics courses (C or better)	1	0	0	1	3	5	15	3.00
11	…student persistence/re-enrollment from one term to the next	0	1	0	2	2	5	15	3.00
12	…student persistence/re-enrollment from one year to the next	0	1	0	2	2	5	15	3.00
13	…completion of certificates and/or degrees	0	0	1	1	3	5	17	3.40
14	…transfer rates	0	1	0	2	2	5	15	3.00
15	…academic performance comparisons between student groups (developmental education and college-ready)	1	0	1	1	2	5	13	2.60

16	Data depicting student persistence, learning, and attainment are routinely disaggregated and reported by student characteristics including…gender	1	0	2	1	1	5	11	2.20
17	…race/ethnicity	1	0	2	1	1	5	11	2.20
18	…income level	3	0	2	0	0	5	4	0.80
19	…full-time/part-time status	0	1	0	2	2	5	15	3.00
20	…residency code/zip code	1	1	1	1	0	4	6	1.50
21	…high school attended	3	0	2	0	0	5	4	0.80
22	…academic preparedness (GPA, TAKS, coursework)	2	1	2	0	0	5	5	1.00
23	…college placement tests (THEA, Accuplacer, etc.)	2	1	2	0	0	5	5	1.00
24	The institution regularly assesses its performance and progress in implementing educational practices, which evidence shows, will contribute to higher rates of learning, persistence, and attainment for students in developmental education.	1	1	1	2	0	5	9	1.80
25	The results of student and institutional assessments are used routinely to inform institutional decisions regarding...strategic priorities	1	1	2	0	1	5	9	1.80
26	...resource allocation	1	1	3	0	0	5	7	1.40
27	...faculty and staff development	1	1	1	2	0	5	9	1.80
27	...improvements in programs and services for learners	1	1	1	2	0	5	9	1.80
29	Beliefs and assertions about "what works" in promoting student learning, persistence, and attainment are evidenced-based.	1	0	2	1	1	5	11	2.20

Survey responses indicate a lack of clear implementation patterns at College D on the all indicators. Responses range from no implementation to full implementation. Eight indicators had the highest response rate at 3.00-3.40. College D is in the process of implementing an institutional research and information systems that provides effective reporting on performance measures and utilizing data collected from cohort tracking to identify areas for improvement. This college is making a minimal to moderate effort in promoting rigorous examination and open discussion of academic performance measures of developmental education students with the internal college community. The responses

for this indicator fall from under discussion to full implementation thus showing there is not clear understanding of what is occurring at the college. The area where College D is making a good effort is in the collection, analysis, and reporting of critical academic measures that specifically focus on success outcomes of the developmental education student such as successful completion of developmental courses and sequence, degree/certificate completion, transfer and persistence rates. College D also reports that data is routinely disaggregated by student characteristics such as gender, race/ethnicity, full-time/part-time status, and academic background and preparedness, but it does not disaggregate socio-economic variables (income level, residency/zip code, high school attended) to the same degree.

These data demonstrates that College B is doing a better job of advancing a culture of evidence ethos on its campus as compared to the other colleges (Table 4.23).

Table 4.23: The Culture of Evidence-Ranking of Colleges by Response Mean Scores

Ranking Level		**1**	**2**	**3**	**4**	**Response Mean Score by Indicator**
College		College B	College A	College C	College D	
1	Institutional research and information systems provide systematic, timely, useful, and user-friendly information about learning, persistence, and attainment levels of students in developmental education.	3.14	2.75	2.80	2.60	**2.82**
2	The institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss…persistence of developmental education students	3.83	3.25	2.60	2.80	**3.12**
3	…developmental education course completion	3.83	3.25	3.20	2.80	**3.27**
4	…developmental education level/sequence completion	3.83	3.25	3.00	2.75	**3.21**

5	…developmental education student performance in subsequent gatekeeper courses	4.00	3.25	2.40	2.75	**3.10**
6	…developmental education student attainment of certificate, degrees, and/or transfer	3.83	3.25	2.60	2.60	**3.07**
7	The institution is committed to cohort tracking of entering students to determine rates of learning, persistence, and attainment and to identify areas for improvement in developmental education.	3.83	2.75	2.40	2.40	**2.85**
8	The institution regularly collects, analyzes, and reports data pertaining to the following… successful completion of remedial/developmental courses (C or better)	4.00	3.60	3.40	3.00	**3.50**
9	…successful completion of remedial/developmental levels/sequence	4.00	3.50	3.00	3.00	**3.38**
10	…successful completion of gatekeeper mathematics courses (C or better)	4.00	3.80	2.60	3.00	**3.35**
11	…student persistence/re-enrollment from one term to the next	4.00	3.75	2.60	3.00	**3.34**
12	…student persistence/re-enrollment from one year to the next	4.00	3.75	2.60	3.00	**3.34**
13	…completion of certificates and/or degrees	3.67	4.00	3.00	3.40	**3.52**
14	…transfer rates	3.50	3.60	2.80	3.00	**3.23**
15	…academic performance comparisons between student groups (developmental education and college-ready)	3.67	3.25	2.60	2.60	**3.03**
16	Data depicting student persistence, learning, and attainment are routinely disaggregated and reported by student characteristics including…gender	3.50	3.25	2.40	2.20	**2.84**
17	race/ethnicity	3.83	3.00	3.00	2.20	**3.01**
18	income level	2.67	3.00	1.80	0.80	**2.07**
19	full-time/part-time status	3.83	3.25	2.20	3.00	**3.07**
20	residency code/zip code	2.50	3.25	2.20	1.50	**2.36**
21	high school attended	2.50	3.00	1.60	0.80	**1.98**
22	academic preparedness (GPA, TAKS, coursework)	3.33	2.50	1.80	1.00	**2.16**
23	college placement tests (THEA, Accuplacer, etc.)	3.00	2.75	2.40	1.00	**2.29**
24	The institution regularly assesses its performance and progress in implementing educational practices which evidence shows will contribute to higher rates of learning, persistence, and attainment for students in developmental education.	3.86	3.25	2.00	1.80	**2.73**

25	The results of student and institutional assessments are used routinely to inform institutional decisions regarding...strategic priorities	3.33	3.20	2.40	1.80	**2.68**
26	...resource allocation	3.33	3.00	2.20	1.40	**2.48**
27	...faculty and staff development	3.33	3.20	2.60	1.80	**2.73**
27	...improvements in programs and services for learners	3.33	3.20	3.00	1.80	**2.83**
29	Beliefs and assertions about "what works" in promoting student learning, persistence, and attainment are evidenced-based.	3.71	3.00	2.20	2.20	**2.78**
	Response Mean Scores by College	**3.56**	**3.24**	**2.53**	**2.28**	

The highest response mean scores (by indicator) for all the colleges were for indicators #1-15. These indicators correspond to how the college collects, analyzes, and shares data. More specifically the indicators describe how the colleges' institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss data that is specifically pertaining to developmental education students and how the institution regularly collects, analyzes, and reports these data.

The lowest response mean scores (by indicator) for all the colleges were indicators for #16-27. These indicators correspond to the level that data is disaggregated, regularly assessed, and used to inform decisions. The colleges do disaggregate by the traditional variables (gender, race/ethnicity, and status) but fail to disaggregate by income level, residency/zip code, high school attended, and college placement tests at the same vigor.

Strategic focus, planning, and resource allocation.

The Strategic Focus, Planning, and Resource Allocation characteristic is comprised of eleven indicators. Effective planning and priority setting for developmental

education programs is evidenced by a strategic plan that clearly includes developmental education and is used to guide operational planning for each fiscal year; the utilization of a structured tool/method in its strategic planning. In addition, communication and collaboration across departments in planning and priority setting is critical, and faculty and adjunct must be included in the process; and resources are consistently allocated and re-allocated to address priorities identified through the planning process.

Based on the survey responses, College A is making a good effort overall in the implementation of effective practices (Table 4.24).

Table 4.24: College A-Strategic Focus, Planning, and Resource Allocation

College A Strategic Focus, Planning, and Resource Allocation		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has a strategic plan that clearly includes developmental education.	0	0	0	2	2	4	14	3.50
2	The strategic plan is used to guide operational planning for each fiscal year.	0	0	1	1	2	4	13	3.25
3	The college utilizes a structured tool/method in its strategic planning such as TQM, Baldridge, etc.	0	0	0	2	2	4	14	3.50
4	The college demonstrates its ability to stop doing things that are proven ineffective with regard to learning, persistence, and attainment of students enrolled in developmental education.	0	0	1	2	1	4	12	3.00
5	The results of student and institutional assessments/evaluations are used routinely to inform plans for improvement in developmental education programs and services.	0	0	1	2	1	4	12	3.00
6	Student performance in developmental education subject areas (mathematics, reading, and writing) is routinely assessed to inform plans for improvement.	0	0	0	3	2	5	17	3.40
7	Cross-departmental meetings to discuss developmental education programming are a routine occurrence.	0	0	1	2	1	4	12	3.00
8	Inter-departmental meetings to discuss developmental education programming are a routine occurrence.	0	0	0	3	1	4	13	3.25

9	Members of the campus community participate extensively in the planning and priority-setting process for developmental education programming.	0	0	1	2	1	4	12	3.00
10	Adjunct faculties are included in discussions regarding developmental education programming.	0	0	2	2	1	5	14	2.80
11	Resources are consistently allocated and re-allocated to address priorities identified through the planning process.	0	0	2	1	1	4	11	2.75

College A is making a good effort in implementing effective practices in the area of strategic focus, planning, and resource allocation. The majority of responses report that practices are in partial to full implementation. According to the responses, the college is making a good effort in its implementation of effective practices in its strategic focus in developmental education in the following ways: its strategic plan clearly includes developmental education and being used to guide operational planning. The college utilizes a structured tool/method in its strategic planning. The college demonstrates its ability to stop doing things that are proven ineffective; uses results of student and institutional assessments/evaluations and routinely uses the results of assessments/evaluation on student performance to inform plans for improvement in developmental education programs and services.

The college is making a good effort in its planning in the following ways: cross-departmental are a routine occurrence; inter-departmental meetings to discuss developmental education programming are a routine occurrence; and members of the campus community participate extensively in the planning and priority-setting process for developmental education programming.

The lowest responses are in the inclusion of adjunct faculty in the discussions regarding developmental education programming and the consistent use of resources through allocation and re-allocation to address priorities identified through the planning process.

Based on the survey responses, College B is making a strong effort overall in the implementation of effective practices (Table 4.25).

Table 4.25: College B-Strategic Focus, Planning, and Resource Allocation

College B Strategic Focus, Planning, and Resource Allocation		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has a strategic plan that clearly includes developmental education.	0	0	0	0	7	7	28	4.00
2	The strategic plan is used to guide operational planning for each fiscal year.	0	0	0	0	7	7	28	4.00
3	The college utilizes a structured tool/method in its strategic planning such as TQM, Baldridge, etc.	0	0	0	0	7	7	28	4.00
4	The college demonstrates its ability to stop doing things that are proven ineffective with regard to learning, persistence, and attainment of students enrolled in developmental education.	0	0	0	1	6	7	27	3.86
5	The results of student and institutional assessments/evaluations are used routinely to inform plans for improvement in developmental education programs and services.	1	0	0	1	5	7	23	3.29
6	Student performance in developmental education subject areas (mathematics, reading, and writing) is routinely assessed to inform plans for improvement.	0	0	0	1	6	7	27	3.86
7	Cross-departmental meetings to discuss developmental education programming are a routine occurrence.	0	0	0	1	6	7	27	3.86
8	Inter-departmental meetings to discuss developmental education programming are a routine occurrence.	0	0	1		6	7	26	3.71
9	Members of the campus community participate extensively in the planning and priority-setting process for developmental education programming.	0	0	1	2	4	7	24	3.43
10	Adjunct faculties are included in discussions regarding developmental education programming.	0	0	2		5	7	24	3.43

11	Resources are consistently allocated and re-allocated to address priorities identified through the planning process.	0	0	1	1	4	6	21	3.50

College B is making a strong effort in implementing effective practices in the area of strategic focus, planning, and resource allocation. The majority of responses report that practices are in full implementation. According to the responses, the college is making a strong effort in its implementation of effective practices in its strategic focus on developmental education in the following ways: its strategic plan clearly includes developmental education and being used to guide operational planning. The college's strategic plan was framed using a structured tool/method. The college demonstrates its ability to stop doing things that are proven ineffective and routinely uses the results of assessments/evaluation on student performance to inform plans for improvement in developmental education programs and services.

The college is making a strong effort in its planning in the following ways: cross- and inter-departmental meetings are a routine occurrence; members of the campus community participate extensively in the planning and priority-setting process for developmental education programming; and the consistent use of resources through allocation and re-allocation to address priorities identified through the planning process.

The lowest responses were in the routine use of results of student and institutional assessments/evaluations to inform plans for improvement in developmental education programs and services; the inclusion of participation of the campus community members in the planning and priority-setting process; and in the inclusion of adjunct faculties in discussions regarding developmental education programming.

Based on the survey responses, College C is making a good effort overall in the implementation of effective practices (Table 4.26).

Table 4.26: College C-Strategic Focus, Planning, and Resource Allocation

College C Strategic Focus, Planning, and Resource Allocation		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has a strategic plan that clearly includes developmental education.	0	1	0	1	3	5	16	3.20
2	The strategic plan is used to guide operational planning for each fiscal year.	0	1	0	1	3	5	16	3.20
3	The college utilizes a structured tool/method in its strategic planning such as TQM, Baldridge, etc.	0	1	1	1	2	5	14	2.80
4	The college demonstrates its ability to stop doing things that are proven ineffective with regard to learning, persistence, and attainment of students enrolled in developmental education.	1	1	0	1	2	5	12	2.40
5	The results of student and institutional assessments/evaluations are used routinely to inform plans for improvement in developmental education programs and services.	0	1	1	1	2	5	14	2.80
6	Student performance in developmental education subject areas (mathematics, reading, and writing) is routinely assessed to inform plans for improvement.	0	1	1	0	2	4	11	2.75
7	Cross-departmental meetings to discuss developmental education programming are a routine occurrence.	1	1	1	2	0	5	9	1.80
8	Inter-departmental meetings to discuss developmental education programming are a routine occurrence.	1	1	2	1	0	5	8	1.60
9	Members of the campus community participate extensively in the planning and priority-setting process for developmental education programming.	0	2	2	1	0	5	9	1.80
10	Adjunct faculties are included in discussions regarding developmental education programming.	1	1	0	3	0	5	10	2.00

11	Resources are consistently allocated and re-allocated to address priorities identified through the planning process.	0	1	1	2	1	5	13	2.60

Survey responses indicate a lack of clear implementation patterns at College C on all indicators. Responses range from no implementation to full implementation. The majority of responses fall in the partial to full implementation categories. Two indicators had the highest response rate at 3.20. College C is making a good effort in its strategic focus implementation by including developmental education in its strategic planning; using the plan to guide operational planning; and using a structured tool/method in development of its strategic plan. The college is also making a good effort in routinely using results of student and institutional assessments/evaluations and student performance to inform plans for improvement. The college is making a moderate effort in demonstrating the ability to stop doing things that are proven ineffective, including adjunct faculties in discussion regarding programming, and using resources effectively to address priorities found through the planning process.

The lowest responses were in the area of planning. The college is making a minimal to moderate effort in the planning of cross-departmental and inter-departmental meeting s to discuss developmental education programming and in the inclusion of members of the campus community in the planning and priority-setting process.

Based on the survey responses, College D is making a minimal effort overall in the implementation of effective practices (Table 4.27).

Table 4.27: College D-Strategic Focus, Planning, and Resource Allocation

College D Strategic Focus, Planning, and Resource Allocation		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has a strategic plan that clearly includes developmental education.	0	1	3	0	1	5	11	2.20
2	The strategic plan is used to guide operational planning for each fiscal year.	0	1	2	2	0	5	11	2.20
3	The college utilizes a structured tool/method in its strategic planning such as TQM, Baldridge, etc.	0	1	3	1	0	5	10	2.00
4	The college demonstrates its ability to stop doing things that are proven ineffective with regard to learning, persistence, and attainment of students enrolled in developmental education.	1	2	1	1	0	5	7	1.40
5	The results of student and institutional assessments/evaluations are used routinely to inform plans for improvement in developmental education programs and services.	0	2	2	1	0	5	9	1.80
6	Student performance in developmental education subject areas (mathematics, reading, and writing) is routinely assessed to inform plans for improvement.	1	1	2	0	1	5	9	1.80
7	Cross-departmental meetings to discuss developmental education programming are a routine occurrence.	2	2	1	0	0	5	4	0.80
8	Inter-departmental meetings to discuss developmental education programming are a routine occurrence.	2	1	1	0	1	5	7	1.40
9	Members of the campus community participate extensively in the planning and priority-setting process for developmental education programming.	2	1	2	0	0	5	5	1.00
10	Adjunct faculties are included in discussions regarding developmental education programming.	2	1	1	1	0	5	6	1.20
11	Resources are consistently allocated and re-allocated to address priorities identified through the planning process.	0	4	1	0	0	5	6	1.20

Survey responses indicate a lack of clear implementation patterns at College D on all indicators. Responses range from no implementation to full implementation. The majority of responses fall in the no implementation, under discussion and marginal implementation categories. Two indicators had the highest response rate at 2.20. College

D is moderate effort in its strategic focus implementation by including developmental education in its strategic planning; using the plan to guide operational planning; and using a structured tool/method in development of its strategic plan. The college is also making a moderate effort in routinely using results of student and institutional assessments/evaluations and student performance to inform plans for improvement.

The college is making a minimal effort in demonstrating the ability to stop doing things that are proven ineffective, planning inter-departmental meetings, including adjunct faculties in discussion regarding programming, and using resources effectively to address priorities found through the planning process. The lowest response scores correspond to the minimal effort the college is doing in planning cross-departmental meetings and the inclusion of campus community members in the planning and priority-setting process for developmental education programming.

College B is doing a better job of implementing effective practices in the developmental education characteristic of strategic focus, planning, and resource planning (Table 4.28).

Table 4.28: Strategic Focus, Planning, and Resource Allocation -Ranking of Colleges by Response Mean Scores

Ranking Level		**1**	**2**	**3**	**4**	
College		College B	College A	College C	College D	**Response Mean Score by Indicator**
1	The institution has a strategic plan that clearly includes developmental education.	4.00	3.50	3.20	2.20	**3.23**
2	The strategic plan is used to guide operational planning for each fiscal year.	4.00	3.25	3.20	2.20	**3.16**

3	The college utilizes a structured tool/method in its strategic planning such as TQM, Baldridge, etc.	4.00	3.50	2.80	2.00	**3.08**
4	The college demonstrates its ability to stop doing things that are proven ineffective with regard to learning, persistence, and attainment of students enrolled in developmental education.	3.86	3.00	2.40	1.40	**2.67**
5	The results of student and institutional assessments/evaluations are used routinely to inform plans for improvement in developmental education programs and services.	3.29	3.00	2.80	1.80	**2.72**
6	Student performance in developmental education subject areas (mathematics, reading, and writing) is routinely assessed to inform plans for improvement.	3.86	3.40	2.75	1.80	**2.95**
7	Cross-departmental meetings to discuss developmental education programming are a routine occurrence.	3.86	3.00	1.80	0.80	**2.37**
8	Inter-departmental meetings to discuss developmental education programming are a routine occurrence.	3.71	3.25	1.60	1.40	**2.49**
9	Members of the campus community participate extensively in the planning and priority-setting process for developmental education programming.	3.43	3.00	1.80	1.00	**2.31**
10	Adjunct faculty are included in discussions regarding developmental education programming.	3.43	2.80	2.00	1.20	**2.36**
11	Resources are consistently allocated and re-allocated to address priorities identified through the planning process.	3.50	2.75	2.60	1.20	**2.51**
	Response Mean Score by College	3.72	3.13	2.45	1.55	

The highest response mean scores (by indicator) for all the colleges were for indicators #1, #2, and #3. These indicators correspond to the inclusion of developmental

education in strategic planning; using the plan to guide operational planning; and using a structured tool/method in the development of a strategic plan.

The lowest response mean scores (by indicator) for all the colleges were indicators #7, #8, #9 and #10 which correspond to the routine planning of cross-departmental and inter-departmental meetings to discuss developmental education programming, and the inclusion of campus community members and adjunct faculties in the planning and priority-setting process.

Leadership for learning.

The Leadership for Learning characteristic is comprised of seven indicators. Effective leadership for learning is evidenced by institutional leaders moving beyond rhetoric and demonstrating commitment through resource allocation, policymaking, and data-driven decision-making. The CEO and other institutional leaders have made developmental education a top priority and frequently use data about student learning, persistence, and attainment to drive decisions.

The CEO, institutional, student service, instructional, and faculty leaders are actively involved in supporting quality instruction and support to the developmental education population. Effective leadership encourages innovation and "thinking outside of the box" about developmental education programming.

Based on the survey responses, College A is making a strong effort overall in the implementation of effective practices (Table 4.29).

Table 4.29: College A-Leadership for Learning

College A Leadership for Learning		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional leaders demonstrate a commitment to strengthening student learning, persistence, and attainment - a commitment that extends beyond rhetoric to actions in resource allocation, policymaking, and data-driven decision-making.	0	0	0	2	2	4	14	3.50
2	The CEO and other institutional leaders frequently use data about student learning, persistence and attainment to drive decisions.	0	0	1	1	2	4	13	3.25
3	The CEO and other institutional leaders have made developmental education a top priority.	0	0	1	0	4	5	18	3.60
4	The CEO and other institutional leaders are actively involved in supporting quality instruction and support to the developmental education population.	0	0	1	1	3	5	17	3.40
5	Instructional leadership and faculty are actively involved in supporting quality instruction and support to the developmental education population.	0	0	0	1	4	5	19	3.80
6	Student services leadership and staff are actively involved in supporting quality instruction and support to the developmental education population.	0	0	0	3	1	4	13	3.25
7	The CEO and other institutional leaders encourage innovation and "thinking outside of the box" with regard to developmental education programming.	0	1	1	0	3	5	15	3.00

College A is making a strong effort overall in implementing effective practices in the area of leadership for learning. The majority of responses report that practices are in partial to full implementation. According to the responses, leadership in all areas of the college actively demonstrates their commitment to strengthening student learning, persistence, and attainment. Data is being used to guide decision-making. Developmental education has been made a top priority. The CEO, institutional/instructional/student service leadership, faculty, and staff are actively involved in supporting quality instruction and support to the developmental education population.

The lowest response score was found in the practice of CEO and other institutional leadership encouraging innovation and “thinking outside of the box”

Based on the survey responses, College B is making a strong effort overall in the implementation of effective practices (Table 4.30).

Table 4.30: College B-Leadership for Learning

College B Leadership for Learning		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional leaders demonstrate a commitment to strengthening student learning, persistence, and attainment-a commitment that extends beyond rhetoric to actions in resource allocation, policymaking, and data-driven decision-making.	0	0	0	1	5	6	23	3.83
2	The CEO and other institutional leaders frequently use data about student learning, persistence and attainment to drive decisions.	0	0	0	1	5	6	23	3.83
3	The CEO and other institutional leaders have made developmental education a top priority.	0	0	0	1	5	6	23	3.83
4	The CEO and other institutional leaders are actively involved in supporting quality instruction and support to the developmental education population.	0	0	0	0	6	6	24	4.00
5	Instructional leadership and faculty are actively involved in supporting quality instruction and support to the developmental education population.	0	0	0	0	7	7	28	4.00
6	Student services leadership and staff are actively involved in supporting quality instruction and support to the developmental education population.	0	0	1	0	6	7	26	3.71
7	The CEO and other institutional leaders encourage innovation and "thinking outside of the box" with regard to developmental education programming.	0	0	0	1	6	7	27	3.86

College B is making a strong effort overall in implementing effective practices in the area of leadership for learning. The majority of responses report that practices are in full implementation. According to the responses, leadership in all areas of the college actively demonstrates their commitment to strengthening student learning, persistence,

and attainment. Data is being used to guide decision-making. Developmental education has been made a top priority. The CEO, institutional/instructional leadership, and faculty are actively involved in supporting quality instruction and support to the developmental education population. In addition, the CEO and other institutional leaders encourage innovation and "thinking outside of the box" concerning developmental education programming at this college.

The lowest response score was found for indicator #6 that describes the active involvement of student services leadership and staff in supporting quality instruction and support to the developmental education population.

Based on the survey responses, College C is making a good effort overall in the implementation of effective practices (Table 4.31).

Table 4.31: College C-Leadership for Learning

College C Leadership for Learning		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional leaders demonstrate a commitment to strengthening student learning, persistence, and attainment-a commitment that extends beyond rhetoric to actions in resource allocation, policymaking, and data-driven decision-making.	1	1	0	1	1	4	8	2.00
2	The CEO and other institutional leaders frequently use data about student learning, persistence and attainment to drive decisions.	0	2	0	1	2	5	13	2.60
3	The CEO and other institutional leaders have made developmental education a top priority.	1	1	0	0	2	4	9	2.25
4	The CEO and other institutional leaders are actively involved in supporting quality instruction and support to the developmental education population.	1	1	0	0	3	5	13	2.60
5	Instructional leadership and faculty are actively involved in supporting quality instruction and support to the developmental education population.	0	1	0	1	3	5	16	3.20

6	Student services leadership and staff are actively involved in supporting quality instruction and support to the developmental education population.	0	1	1	0	3	5	15	3.00
7	The CEO and other institutional leaders encourage innovation and "thinking outside of the box" with regard to developmental education programming.	1	1	0	1	2	5	12	2.40

College C is making a good effort overall in implementing effective practices in the area of leadership for learning. The majority of responses report that practices are in partial to full implementation. The indicator with the highest response (strong effort) is #5, which describes the college's instructional leadership and faculty active involvement in supporting quality instruction and support to the developmental education population.

According to the responses, a good effort in the following practices: the use of data to guide decision making by the CEO and other institutional leaders; student services and staff are actively involved in supporting quality instruction and support; and the college's CEO and other institutional leaders encourage innovation and "thinking outside of the box."

The indicators with the lowest response scores were #1 and #3 that describes the institutional leaders' commitment towards strengthening student learning, persistence and attainment by targeting resource allocation, policymaking, and data-driven decision-making and their commitment to making developmental education a top priority.

Based on the survey responses, College D is making a moderate effort overall in the implementation of effective practices (Table 4.32).

Table 4.32: College D-Leadership for Learning

College D Leadership for Learning		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	Institutional leaders demonstrate a commitment to strengthening student learning, persistence, and attainment-a commitment that extends beyond rhetoric to actions in resource allocation, policymaking, and data-driven decision-making.	0	1	2	2	0	5	11	2.20
2	The CEO and other institutional leaders frequently use data about student learning, persistence and attainment to drive decisions.	0	1	1	2	1	5	13	2.60
3	The CEO and other institutional leaders have made developmental education a top priority.	0	2	1	1	1	5	11	2.20
4	The CEO and other institutional leaders are actively involved in supporting quality instruction and support to the developmental education population.	0	2	1	1	1	5	11	2.20
5	Instructional leadership and faculty are actively involved in supporting quality instruction and support to the developmental education population.	0	2	0	2	1	5	12	2.40
6	Student services leadership and staff are actively involved in supporting quality instruction and support to the developmental education population.	0	1	1	2	1	5	13	2.60
7	The CEO and other institutional leaders encourage innovation and "thinking outside of the box" with regard to developmental education programming.	1	0	1	2	1	5	12	2.40

Survey responses indicate a lack of clear implementation patterns at College D on all indicators. Responses range from under discussion to full implementation, with one no implementation. The majority of responses fall in the under discussion and partial implementation categories. College D is making a moderate effort overall in implementing effective practices in the area of leadership for learning.

According to the responses, a good effort is being made in use of data to guide decision-making; instructional leadership and faculty, and student services and staff are

actively involved in supporting quality instruction and support to the developmental education population; and the CEO and other institutional leaders encourage innovation and "thinking outside of the box."

The indicators with the lowest response scores were #1, #3, and #4 that describes the institutional leaders' commitment towards strengthening student learning, persistence and attainment by targeting resource allocation, policymaking, and data-driven decision-making; their commitment to making developmental education a top priority; and actively supporting quality instruction and support to the developmental education population.

These data demonstrates that College B is doing a stronger job of implementing effective practices in leadership for learning (Table 4.33).

Table 4.33: Leadership for Learning- Ranking of Colleges by Response Mean Scores

Ranking Level		**1**	**2**	**3**	**4**	
College		College B	College A	College C	College D	**Response Mean Score by Indicator**
1	Institutional leaders demonstrate a commitment to strengthening student learning, persistence, and attainment- a commitment that extends beyond rhetoric to actions in resource allocation, policymaking, and data-driven decision-making.	3.83	3.50	2.00	2.20	**2.88**
2	The CEO and other institutional leaders frequently use data about student learning, persistence and attainment to drive decisions.	3.83	3.25	2.60	2.60	**3.07**
3	The CEO and other institutional leaders have made developmental education a top priority.	3.83	3.60	2.25	2.20	**2.97**
4	The CEO and other institutional leaders are actively involved in supporting quality instruction and support to the developmental education population.	4.00	3.40	2.60	2.20	**3.05**

5	Instructional leadership and faculty are actively involved in supporting quality instruction and support to the developmental education population.	4.00	3.80	3.20	2.40	**3.35**
6	Student services leadership and staff are actively involved in supporting quality instruction and support to the developmental education population.	3.71	3.25	3.00	2.60	**3.14**
7	The CEO and other institutional leaders encourage innovation and "thinking outside of the box" with regard to developmental education programming.	3.86	3.00	2.40	2.40	**2.92**
	Response Mean Score by College	**3.87**	**3.40**	**2.58**	**2.37**	

The highest response mean scores (by indicator) were for indicators #5 and #6. These indicators correspond to how instructional/student service leadership, faculty, and student services staff are involved in supporting quality instruction and support to the developmental education population.

The lowest response mean scores (by indicator) were indicators #1 and #7 which describe the demonstration of institutional leaders' commitment to strengthening student learning, persistence, and attainment through targeting the allocation of resources, policy making, and data-driven decision making; and their encouragement of innovation and "thinking outside of the box" with regard to developmental education programming.

The people of the college.

The People of the College characteristic is comprised of nine indicators. Effective colleges recruit, select, and retain highly qualified and highly motivated staff to work with developmental education students. Systematic and rigorous evaluation of teaching effectiveness routinely occurs and includes evaluations by both peers and students. Senior leadership supports professional development. Mentoring and orientation are provided to

new faculty and adjuncts that teach developmental mathematics. Mathematics faculty members routinely identify high-failure-rate courses and undertake collaborative re-design of those courses to promote student learning and persistence while maintaining high quality standards.

Based on the survey responses, College A is making a good effort overall in the implementation of effective practices (Table 4.34).

Table 4.34: College A-The People of the College

College A The People of the College		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The recruitment, selection, and orientation of faculty/staff who will work with developmental education students explicitly reflect the importance of hiring qualified personnel.	0	0	0	2	3	5	18	3.60
2	Systematic evaluation of developmental education teaching effectiveness includes evaluation by both peers and students.	0	0	0	1	4	5	19	3.80
3	Rigorous evaluation of teaching effectiveness in developmental education mathematics courses routinely occurs.	0	0	0	4	1	5	16	3.20
4	The mathematics division/department utilizes various strategies to promote the improvement of teaching effectiveness in its developmental mathematic courses.	0	0	1	3	1	5	15	3.00
5	Mathematics faculty members routinely identify high-failure-rate courses and undertake collaborative re-design of those courses to promote student learning and persistence while maintaining high quality standards.	0	1	0	3	1	5	14	2.80
6	Senior leadership provides fiscal support for professional developmental opportunities for developmental education faculty and staff.	0	1	0	2	2	5	15	3.00
7	Faculty/adjuncts and staff who work with developmental education students are REQUIRED to participate in certain professional development activities.	0	2	1	2	0	5	10	2.00
8	The mathematics division/department provides orientation to new faculty/adjuncts who teach developmental mathematics.	1	1	2	0	1	5	9	1.80
9	The mathematics division/department provides mentoring for faculty/adjuncts who teach developmental mathematics.	1	0	2	1	1	5	11	2.20

College A is making a good effort overall in implementing effective practices in the people of the college characteristic. The majority of responses report that practices are in partial to full implementation.

According to the responses, College A is making a strong effort in indicators #1, #2, and #3. The college is in partial to full implementation of reflecting the importance of hiring qualified personnel, who will work with developmental education students, by targeting its recruitment, selection, and orientation practices. The responses also indicate that the college has moved to full implementation of using peer/student evaluations to assess developmental education teaching effectiveness and is in partial implementation of specifically assessing student performance in developmental mathematics courses.

This mathematics division/department is making a good effort in its partial implementation of utilizing various strategies to promote teaching effectiveness and in identifying high-failure-rate courses and undertaking course re-design on a routine basis. In addition, senior leadership is moving towards partial to full implementation of providing fiscal support for professional developmental opportunities for developmental education faculty and staff.

The lowest response scores was found in indicators #7, #8, and #9 which describe the requirement of developmental education faculty and adjuncts to participate in professional developmental activities; and the provision by the mathematics division/department to provide orientation or mentoring to new faculty and adjuncts who will teach developmental mathematics.

Based on the survey responses, College B is making a strong effort overall in the implementation of effective practices (Table 4.35).

Table 4.35: College B-The People of the College

College B The People of the College		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The recruitment, selection, and orientation of faculty/staff who will work with developmental education students explicitly reflect the importance of hiring qualified personnel.	0	0	0	1	6	7	34	3.86
2	Systematic evaluation of developmental education teaching effectiveness includes evaluation by both peers and students.	0	0	0	1	6	7	34	3.86
3	Rigorous evaluation of teaching effectiveness in developmental education mathematics courses routinely occurs.	0	0	0	0	7	7	35	4.00
4	The mathematics division/department utilizes various strategies to promote the improvement of teaching effectiveness in its developmental mathematic courses.	0	0	0	1	6	7	34	3.86
5	Mathematics faculty members routinely identify high-failure-rate courses and undertake collaborative re-design of those courses to promote student learning and persistence while maintaining high quality standards.	0	0	0	1	6	7	34	3.86
6	Senior leadership provides fiscal support for professional developmental opportunities for developmental education faculty and staff.	0	0	0	1	5	6	29	3.83
7	Faculty/adjuncts and staff who work with developmental education students are REQUIRED to participate in certain professional development activities.	0	1	0	0	6	7	32	3.57
8	The mathematics division/department provides orientation to new faculty/adjuncts who teach developmental mathematics.	1	0	0	0	6	7	31	3.43
9	The mathematics division/department provides mentoring for faculty/adjuncts who teach developmental mathematics.	0	0	1	0	6	7	33	3.71

College B is making a strong effort overall in implementing effective practices in the people of the college characteristic. The majority of responses report that practices are in full implementation.

According to the responses, College B is making a strong effort in all indicators. The college is moving towards full implementation of reflecting the importance of hiring qualified personnel, who will work with developmental education students, by targeting its recruitment, selection, and orientation practices. The responses also indicate that the college has moved towards full implementation of the following practices: using peer/student evaluations to assess developmental education teaching effectiveness; assessing student performance in developmental mathematics courses; and utilizing various strategies to promote teaching effectiveness. Also in full implementation is the identification of high-failure-rate courses and undertaking course re-design on a routine basis and the provision of fiscal support by senior leadership for professional developmental opportunities for developmental education faculty and staff. The college is also moving towards full implementation of requiring developmental education faculty, adjuncts, and staff to participate in professional developmental activities; providing orientation for new developmental mathematics faculty and adjuncts; and providing mentoring to all who teach developmental mathematics.

Based on the survey responses, College C is making a good effort overall in the implementation of effective practices (Table 4.36).

Table 4.36: College C-The People of the College

College C The People of the College		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The recruitment, selection, and orientation of faculty/staff who will work with developmental education students explicitly reflect the importance of hiring qualified personnel.	1	1	0	1	2	5	12	2.40
2	Systematic evaluation of developmental education teaching effectiveness includes evaluation by both peers and students.	0	1	0	1	3	5	16	3.20
3	Rigorous evaluation of teaching effectiveness in developmental education mathematics courses routinely occurs.	0	1	0	2	2	5	15	3.00
4	The mathematics division/department utilizes various strategies to promote the improvement of teaching effectiveness in its developmental mathematic courses.	0	1	1	0	2	4	11	2.75
5	Mathematics faculty members routinely identify high-failure-rate courses and undertake collaborative re-design of those courses to promote student learning and persistence while maintaining high quality standards.	0	1	1	1	2	5	14	2.80
6	Senior leadership provides fiscal support for professional developmental opportunities for developmental education faculty and staff.	0	1	2	2	0	5	11	2.20
7	Faculty/adjuncts and staff who work with developmental education students are REQUIRED to participate in certain professional development activities.	1	1	0	3	0	5	10	2.00
8	The mathematics division/department provides orientation to new faculty/adjuncts who teach developmental mathematics.	0	1	0	1	3	5	16	3.20
9	The mathematics division/department provides mentoring for faculty/adjuncts who teach developmental mathematics.	0	1	0	1	3	5	16	3.20

College C is making a good effort overall in implementing effective practices in the people of the college characteristic. The majority of responses report that practices are in partial to full implementation.

According to the responses, College C is making a good effort in all but two indicators. The college is making a good effort in the following indicators: reflecting the importance of hiring qualified personnel, who will work with developmental education

students, by targeting its recruitment, selection, and orientation practices; the use of peer/student evaluations to assess developmental education teaching effectiveness and specifically assessing student performance in developmental mathematics courses.

This mathematics division/department is making a good effort in utilizing various strategies to promote teaching effectiveness; in identifying high-failure-rate courses and undertaking course re-design on a routine basis; in the provision orientation to new developmental mathematics faculty and adjunct; and providing mentoring to all faculty and adjuncts who will teach developmental mathematics.

The lowest response scores were found in indicators #6 and #7 that describes the provision of fiscal support by senior leadership for professional developmental opportunities and the requirement of developmental education faculty and adjuncts to participate in professional developmental activities.

Based on the survey responses, College D is making a moderate effort overall in the implementation of effective practices (Table 4.37).

Table 4.37: College D-The People of the College

College D The People of the College		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The recruitment, selection, and orientation of faculty/staff who will work with developmental education students explicitly reflect the importance of hiring qualified personnel.	2	0	0	2	1	5	10	2.00
2	Systematic evaluation of developmental education teaching effectiveness includes evaluation by both peers and students.	1	0	2	0	2	5	12	2.40
3	Rigorous evaluation of teaching effectiveness in developmental education mathematics courses routinely occurs.	0	2	0	2	1	5	12	2.40
4	The mathematics division/department utilizes various strategies to promote	2	0	0	2	1	5	10	2.00

	the improvement of teaching effectiveness in its developmental mathematic courses.								
5	Mathematics faculty members routinely identify high-failure-rate courses and undertake collaborative re-design of those courses to promote student learning and persistence while maintaining high quality standards.	1	1	1	0	2	5	11	2.20
6	Senior leadership provides fiscal support for professional developmental opportunities for developmental education faculty and staff.	2	0	1	2	0	5	8	1.60
7	Faculty/adjuncts and staff who work with developmental education students are REQUIRED to participate in certain professional development activities.	4	0	0	1	0	5	3	0.60
8	The mathematics division/department provides orientation to new faculty/adjuncts who teach developmental mathematics.	2	1	0	0	2	5	9	1.80
9	The mathematics division/department provides mentoring for faculty/adjuncts who teach developmental mathematics.	2	1	1	0	1	5	7	1.40

Survey responses indicate a lack of clear implementation patterns at College D on all indicators. Responses range from under discussion to full implementation. College D is making a moderate effort overall in implementing effective practices in this characteristic.

According to the responses, College D is making a good effort in two indicators, #2, and #3, that describe the use of peer/student evaluations to assess developmental education teaching effectiveness and specifically assessing student performance in developmental mathematics courses.

The college is making a moderate effort in the following indicators: reflecting the importance of hiring qualified personnel, who will work with developmental education students, by targeting its recruitment, selection, and orientation practices. A moderate effort is also being made by the mathematics division/department in utilizing various

strategies to promote teaching effectiveness; in identifying high-failure-rate courses and undertaking course re-design on a routine basis; in the provision orientation to new developmental mathematics faculty and adjunct; and provision of fiscal support by senior leadership for professional developmental opportunities for developmental education faculty.

The lowest response scores were found in indicators #7 (0.60) and #9 (1.60) which describe the requirement of developmental education faculty and adjuncts to participate in professional developmental activities and the provision of mentoring to faculty/adjuncts who teach developmental mathematics by the mathematics division/department.

These data demonstrates that College B is doing a better job of implementing effective practices as compared to the other colleges (Table 4.38).

Table 4.38: The People of the College-Ranking of Colleges by Response Mean Scores

Ranking Level		**1**	**2**	**3**	**4**	
College		College B	College A	College C	College D	**Response Mean Score by Indicator**
1	The recruitment, selection, and orientation of faculty/staff who will work with developmental education students explicitly reflect the importance of hiring qualified personnel.	3.86	3.60	2.40	2.00	**2.97**
2	Systematic evaluation of developmental education teaching effectiveness includes evaluation by both peers and students.	3.86	3.80	3.20	2.40	**3.32**
3	Rigorous evaluation of teaching effectiveness in developmental education mathematics courses routinely occurs.	4.00	3.20	3.00	2.40	**3.15**
4	The mathematics division/department utilizes various strategies to promote the improvement of teaching	3.86	3.00	2.75	2.00	**2.90**

	effectiveness in its developmental mathematic courses.					
5	Mathematics faculty members routinely identify high-failure-rate courses and undertake collaborative re-design of those courses to promote student learning and persistence while maintaining high quality standards.	3.86	2.80	2.80	2.20	**2.92**
6	Senior leadership provides fiscal support for professional developmental opportunities for developmental education faculty and staff.	3.83	3.00	2.20	1.60	**2.66**
7	Faculty/adjuncts and staff who work with developmental education students are REQUIRED to participate in certain professional development activities.	3.57	2.00	2.00	0.60	**2.04**
8	The mathematics division/department provides orientation to new faculty/adjuncts who teach developmental mathematics.	3.43	1.80	3.20	1.80	**2.56**
9	The mathematics division/department provides mentoring for faculty/adjuncts who teach developmental mathematics.	3.71	2.20	3.20	1.40	**2.63**
	Response Mean Score by College	**3.78**	**2.82**	**2.75**	**1.82**	

The highest response mean scores (by indicator) were for indicators #2 and #3 which describe the use of peer/student evaluations to assess developmental education teaching effectiveness and specifically assessing student performance in developmental mathematics courses.

The lowest response mean scores (by indicator) for all the colleges were indicators #7, #8 and #9 which describes the requirement of developmental education faculty and adjuncts to participate in professional developmental activities; the provision, by the mathematics division/department, orientation to new developmental mathematics

faculty and adjunct and mentoring to faculty/adjuncts who teach developmental mathematics.

Institutional policies and practices.

The Institutional Policies and Practices characteristic is comprised of twelve indicators. Strong developmental education programs are managed by an administrative leader and are highly coordinated or in a single department.

Effective colleges implement key institutional policies promoting focus and accountability on student learning, persistence, and attainment consistent with evidence-based research such as mandatory assessment, mandatory placement, and removal of late registration. Developmental education students are allowed to enroll in credit-bearing academic courses only if they demonstrate the reading, writing, or mathematics skills requisite to success in those courses; the college requires working students to take fewer hours; and mandatory advising, college orientation and study skills courses are required of all entering developmental education students. In addition, students enrolled in online developmental education courses are required to be assessed on their technology skills.

Based on the survey responses, College A is making a moderate effort in the implementation of effective practices (Table 4.39).

Table 4.39: College A-Institutional Policies and Practices

College A Institutional Policies and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The organizational arrangement of developmental courses and services are highly coordinated.	0	0	1	2	1	4	12	3.00
2	The organizational arrangement of developmental courses and services are housed in a single department.	3	1	0	0	1	5	5	1.00
3	The organizational arrangement of developmental courses and services retains an administrative leader.	3	1	0	0	1	5	5	1.00
4	Key institutional policies promoting focus and accountability on student learning, persistence, and attainment consistent with evidence-based research…this college requires mandatory assessment of all entering students.	0	0	0	1	4	5	19	3.80
5	…although repealed by the Texas Success Initiative, this college believes that mandatory placement is necessary to ensure developmental education student success.	0	0	0	2	3	5	18	3.60
6	…to ensure that developmental education students who are already ill-prepared do not fall further behind, late registration is not made available.	4	0	0	1	0	5	3	0.60
7	…developmental education students are allowed to enroll in credit-bearing academic courses only if they demonstrate the reading, writing, or mathematics skills requisite to success in those courses.	0	0	0	0	4	4	16	4.00
8	…to ensure that working developmental education students successfully complete their courses, the college requires working students to take fewer hours.	4	0	1	0	0	5	2	0.40
9	…mandatory advising is required for all developmental education students.	1	0	0	1	3	5	15	3.00
10	…participation in college orientation is required of all entering developmental education students.	0	0	1	1	3	5	17	3.40
11	…participation in a study skills course is required of all entering developmental education students.	2	0	3	0	0	5	6	1.20
12	…students enrolled in online developmental education courses are required to be assessed on their technology skills.	1	1	2	0	1	5	9	1.80

College A is making a moderate effort overall in implementing effective practices in the institutional policies and practices characteristic. The majority of responses fall into the no implementation and full implementation category, or one extreme from the other.

The organizational arrangement of developmental education courses and services is in the marginal to full implementation of a highly coordinated system. Developmental education courses and services are not housed in a single department or retain an administrative leader.

College A has deployed institutional policies and practices that have proven effective such as mandatory assessment, mandatory placement, mandatory advising, and requiring student orientation for developmental education students. In addition, the college is full implementation of allowing students to enroll credit-bearing courses only if they demonstrate the required skills needed for the course.

The college has not implemented the following practices: moved to remove late registration as an option, to require working students to take fewer credit-bearing academic courses, and require a study skills course. There is not a clear indication that the college is implementing an assessment of technology skills for students who are enrolled in online developmental education course.

Based on the survey responses, College B is making a strong effort in the implementation of effective practices (Table 4.40).

Table 4.40: College B-Institutional Policies and Practices

College B Institutional Policies and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The organizational arrangement of developmental courses and services are highly coordinated.	0	0	0	1	6	7	27	3.86
2	The organizational arrangement of developmental courses and services are housed in a single department.	1	0	1	1	3	6	17	2.83
3	The organizational arrangement of developmental courses and services retains an administrative leader.	0	0	1	2	3	6	20	3.33
4	Key institutional policies promoting focus and accountability on student learning, persistence, and attainment consistent with evidence-based research…this college requires mandatory assessment of all entering students.	0	0	0	1	6	7	27	3.86
5	…although repealed by the Texas Success Initiative, this college believes that mandatory placement is necessary to ensure developmental education student success.	0	0	0	0	7	7	28	4.00
6	…to ensure that developmental education students who are already ill-prepared do not fall further behind, late registration is not made available.	1	0	0	0	6	7	24	3.43
7	…developmental education students are allowed to enroll in credit-bearing academic courses only if they demonstrate the reading, writing, or mathematics skills requisite to success in those courses.	0	0	0	1	6	7	27	3.86
8	…to ensure that working developmental education students successfully complete their courses, the college requires working students to take fewer hours.	3	0	0	2	2	7	14	2.00
9	…mandatory advising is required for all developmental education students.	1	0	1	1	3	6	17	2.83
10	…participation in college orientation is required of all entering developmental education students.	1	1	0	0	5	7	21	3.00
11	…participation in a study skills course is required of all entering developmental education students.	0	1	1	0	4	6	19	3.17
12	…students enrolled in online developmental education courses are required to be assessed on their technology skills.	4	0	1	0	2	7	10	1.43

College B is making a strong effort overall in implementing effective practices in the institutional policies and practices characteristic. The majority of responses fall in the full implementation category.

The college is in full implementation of a highly coordinated system for its developmental education courses and services. In addition, the college is moving towards full implementation of its developmental education courses and services in a single department and retention of an administrative leader.

College B has deployed institutional policies and practices that have proven effective for developmental education students such as mandatory assessment, mandatory placement, no late registration, and not allowing students to enroll in credit-bearing academic courses only if they demonstrate the skills requisite for the course.

The college is moving toward full implementation of the following practices for developmental education students: mandatory advising, requiring orientation, and requiring a study skills course.

There is not a clear indication that the college is implementing an assessment of technology skills for students who are enrolled in online developmental education course and requiring working students to take fewer hours.

Based on the survey responses, College C is making a moderate effort in the implementation of effective practices (Table 4.41).

Table 4.41: College C-Institutional Policies and Practices

College C Institutional Policies and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The organizational arrangement of developmental courses and services are highly coordinated.	0	1	0	0	4	5	17	3.40
2	The organizational arrangement of developmental courses and services are housed in a single department.	4	1	0	0	0	5	1	0.20
3	The organizational arrangement of developmental courses and services retains an administrative leader.	3	1	0	0	1	5	5	1.00
4	Key institutional policies promoting focus and accountability on student learning, persistence, and attainment consistent with evidence-based research…this college requires mandatory assessment of all entering students.	0	1	0	1	3	5	16	3.20
5	…although repealed by the Texas Success Initiative, this college believes that mandatory placement is necessary to ensure developmental education student success.	1	1	0	1	2	5	12	2.40
6	…to ensure that developmental education students who are already ill-prepared do not fall further behind, late registration is not made available.	2	2	1	0	0	5	4	0.80
7	…developmental education students are allowed to enroll in credit-bearing academic courses only if they demonstrate the reading, writing, or mathematics skills requisite to success in those courses.	0	1	1	1	2	5	14	2.80
8	…to ensure that working developmental education students successfully complete their courses, the college requires working students to take fewer hours.	4	1	0	0	0	5	1	0.20
9	…mandatory advising is required for all developmental education students.	1	1	1	2	0	5	9	1.80
10	…participation in college orientation is required of all entering developmental education students.	0	1	2	0	2	5	13	2.60
11	…participation in a study skills course is required of all entering developmental education students.	0	1	1	1	2	5	14	2.80
12	…students enrolled in online developmental education courses are required to be assessed on their technology skills.	2	1	1	1	0	5	6	1.20

College C is making a moderate effort overall in implementing effective practices in the institutional policies and practices characteristic. The majority of responses fall

into the no implementation and full implementation category, or one extreme from the other.

The college is moving towards full implementation of a highly coordinated system for its developmental education courses and services. Developmental education courses and services neither are housed in a single department nor retain an administrative leader.

There is not a clear indication that the college is in partial to full implementation of effective practices other than in mandatory assessment.

Based on the survey responses, College D is making a moderate effort in the implementation of effective practices (Table 4.42).

Table 4.42: College D-Institutional Policies and Practices

College D Institutional Policies and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The organizational arrangement of developmental courses and services are highly coordinated.	1	2	0	0	2	5	10	2.00
2	The organizational arrangement of developmental courses and services are housed in a single department.	4	1	0	0	0	5	1	0.20
3	The organizational arrangement of developmental courses and services retains an administrative leader.	4	0	0	1	0	5	3	0.60
4	Key institutional policies promoting focus and accountability on student learning, persistence, and attainment consistent with evidence-based research…this college requires mandatory assessment of all entering students.	0	0	0	1	4	5	19	3.80
5	…although repealed by the Texas Success Initiative, this college believes that mandatory placement is necessary to ensure developmental education student success.	0	0	0	2	3	5	18	3.60
6	…to ensure that developmental education students who are already ill-prepared do not fall further behind, late registration is not made available.	3	1	1	0	0	5	3	0.60

7	…developmental education students are allowed to enroll in credit-bearing academic courses only if they demonstrate the reading, writing, or mathematics skills requisite to success in those courses.	1	1	0	1	2	5	12	2.40
8	…to ensure that working developmental education students successfully complete their courses, the college requires working students to take fewer hours.	4	1	0	0	0	5	1	0.20
9	…mandatory advising is required for all developmental education students.	0	2	1	0	2	5	12	2.40
10	…participation in college orientation is required of all entering developmental education students.	0	0	0	1	4	5	19	3.80
11	…participation in a study skills course is required of all entering developmental education students.	1	0	0	1	3	5	15	3.00
12	…students enrolled in online developmental education courses are required to be assessed on their technology skills.	2	3	0	0	0	5	3	0.60

Based on the survey responses, College D is making a moderate effort in the implementation of effective practices. College D is making a moderate effort overall in implementing effective practices in the institutional policies and practices characteristic. The majority of responses fall into the no implementation and full implementation category, or one extreme from the other. It is unclear if College D has a highly coordinated system for its developmental education courses and services based on the responses ranging from no implementation to full implementation. It is clear that developmental education courses and services are neither housed in a single department nor retain an administrative leader.

College D has deployed institutional policies and practices that have proven effective such as mandatory assessment, mandatory placement, and requiring student orientation for developmental education students. There is not a clear indication that the

college requires students to: receive advising, demonstrate required skills prior to enrolling in a credit-bearing course, or enroll in a study skills course.

Of the effectives practices that are recommended to improve developmental education programs, the college has not implemented the following practices: removal of late registration as an option, requiring working students to take fewer credit-bearing academic courses, and assessing the technology skills of students who are enrolled in online developmental education course.

Based on the overall survey responses, College B is doing a better job of implementing effective practices with regards to institutional policies and practices as compared to the other colleges (Table 4.43).

Table 4.43: Institutional Policies and Practices- Ranking of Colleges by Response Mean Scores

Ranking Level		**1**	**2**	**3**	**4**	
College		College B	College A	College D	College C	**Response Mean Score by Indicator**
1	The organizational arrangement of developmental courses and services are highly coordinated.	3.86	3.00	2.00	3.40	**3.07**
2	The organizational arrangement of developmental courses and services are housed in a single department.	2.83	1.00	0.20	0.20	**1.06**
3	The organizational arrangement of developmental courses and services retains an administrative leader.	3.33	1.00	0.60	1.00	**1.48**
4	Key institutional policies promoting focus and accountability on student learning, persistence, and attainment consistent with evidence-based research…this college requires mandatory assessment of all entering students.	3.86	3.80	3.80	3.20	**3.67**
5	…although repealed by the Texas Success Initiative, this	4.00	3.60	3.60	2.40	**3.40**

	college believes that mandatory placement is necessary to ensure developmental education student success.					
6	…to ensure that developmental education students who are already ill-prepared do not fall further behind, late registration is not made available.	3.43	0.60	0.60	0.80	**1.36**
7	…developmental education students are allowed to enroll in credit-bearing academic courses only if they demonstrate the reading, writing, or mathematics skills requisite to success in those courses.	3.86	4.00	2.40	2.80	**3.27**
8	…to ensure that working developmental education students successfully complete their courses, the college requires working students to take fewer hours.	2.00	0.40	0.20	0.20	**0.70**
9	…mandatory advising is required for all developmental education students.	2.83	3.00	2.40	1.80	**2.51**
10	…participation in college orientation is required of all entering developmental education students.	3.00	3.40	3.80	2.60	**3.20**
11	…participation in a study skills course is required of all entering developmental education students.	3.17	1.20	3.00	2.80	**2.54**
12	…students enrolled in online developmental education courses are required to be assessed on their technology skills.	1.43	1.80	0.60	1.20	**1.26**
	Response Mean Score by College	**3.13**	**2.23**	**1.93**	**1.87**	

All the colleges report that developmental courses and services were highly coordinated but only one college is moving towards housing developmental education in a single department headed by an administrative leader and that is College B.

Mandatory assessment, mandatory placement, and requiring students to meet course prerequisites prior to enrollment are more common across the colleges. In

addition, requiring orientation of developmental education students appears to be practice that is being implemented across all colleges.

The practices that are not being implemented fully across colleges and received the lowest response scores among the lowest performing colleges are as follows: eliminating late registration, requiring working students to take fewer hours, and assessing technology skills of students enrolled in developmental education courses.

Instructional approaches and practices.

The Instructional Approaches and Practices characteristic is comprised of forty indicators. Strong instructional approaches and practices focus on student learning, persistence, and outcomes. The college has clearly defined student-learning outcome for each developmental and college-level mathematics course. Faculty members have developed common criteria or rubrics that are used in ascertaining and documenting each student's level of attainment of required learning outcomes, and design curriculum and teaching strategies to ensure alignment with required student learning outcomes.

The developmental mathematics exit-level competencies are aligned with the college entry-level competencies in college mathematics and faculty members clearly articulate learning outcomes at different levels of the developmental mathematics curriculum; consequently, prerequisites are clear and rational, and sequential levels are aligned with one another. Critical thinking concepts and methods are taught in the developmental mathematics curriculum.

The mathematics division/department systematically utilizes a myriad of instructional approaches in its developmental mathematics course such as cooperative

learning, learning communities, accelerated learning, contextual learning, and problem-based learning. Developmental mathematics courses are delivered in variety of ways aside from the traditional lecture, such as emporium, non-course based instruction, self-paced instruction, math refresher, and immersion. The mathematics division/department utilizes the following several techniques and strategies in its developmental mathematics courses such as frequent testing, frequent provision of feedback on students' academic performance, and the use of integrated technology and media to support student learning.

The mathematics division/department utilizes the following supplemental practices in its developmental mathematics courses: supplemental instruction, tutoring math learning center, student development course, and study skills workshops.

The institution is actively engaged in the process for certification of its developmental education program and services through National Association of Developmental Education (NADE) and the College Reading and Learning Association (CRLA).

Intensive academic support is provided to developmental students who require two or more levels of developmental mathematics and are provided with up-to-date and accessible information regarding state, district, and college policies that will affect their college experience such as placement exam score changes, change in course offerings or structure, and information regarding academic support programs.

Based on the survey responses, College A is making a moderate effort in the implementation of effective practices (Table 4.44).

Table 4.44: College A-Instructional Approaches and Practices

College A Instructional Approaches and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has clearly defined REQUIRED student learning outcomes…for each developmental mathematics course	0	0	0	1	4	5	19	3.80
2	...for each college-level mathematics course	0	0	0	1	4	5	19	3.80
3	Faculty members have developed common criteria or rubrics that are used in ascertaining and documenting each student's level of attainment of required learning outcomes.	0	0	2	3	0	5	13	2.60
4	Faculty design curriculum and teaching strategies to ensure alignment with required student learning outcomes.	0	0	1	4	0	5	14	2.80
5	The developmental mathematics exit-level competencies are aligned with the college entry-level competencies in college mathematics.	0	0	0	2	3	5	18	3.60
6	Faculty members clearly articulate learning outcomes at different levels of the developmental mathematics curriculum; consequently, prerequisites are clear and rational, and sequential levels are aligned with one another.	0	0	0	3	2	5	17	3.40
7	Critical thinking concepts and methods are taught in the developmental mathematics curriculum.	0	0	1	4	0	5	14	2.80
8	The mathematics division/department systematically utilizes the following instructional approaches in its developmental mathematics courses…cooperative learning	0	1	2	2	0	5	11	2.20
9	…collaborative learning	0	1	2	2	0	5	11	2.20
10	…learning communities	0	1	3	1	0	5	10	2.00
11	…accelerated learning	1	0	2	1	1	5	11	2.20
12	…contextual learning	0	2	2	1	0	5	9	1.80
13	…mastery learning	0	1	0	2	1	4	11	2.75
14	…problem based learning	0	1	1	2	1	5	13	2.60
15	The institution delivers developmental mathematics courses in a variety of ways…lecture	0	0	0	0	5	5	20	4.00
16	…hybrid (lecture and online)	0	0	0	2	3	5	18	3.60
17	…online	0	0	0	1	4	5	19	3.80
18	…emporium	3	0	0	0	0	3	0	0.00
19	…non-course based instruction	2	0	0	1	1	4	7	1.75
20	…self-paced instruction	2	2	0	0	0	4	2	0.50
21	…individualized instruction	4	0	0	0	0	4	0	0.00
22	…accelerated/Fast Track	1	1	0	1	1	4	8	2.00
23	…modules	2	2	0	0	0	4	2	0.50
24	…math refresher	0	2	1	0	1	4	8	2.00
25	…immersion	4	0	0	0	0	4	0	0.00
26	...Bridge programs	1	0	1	1	0	3	5	1.67

27	The mathematics division/department utilizes the following techniques/strategies in its developmental mathematics courses…frequent testing of students (at least 10 times a semester)	1	0	3	1	0	5	9	1.80
28	…frequent provision of feedback on students' academic performance	0	0	2	3	0	5	13	2.60
29	…students frequently engage in self-assessment and reflection on their learning processes and goals	1	0	4	0	0	5	8	1.60
30	…use of integrated technology and media to support student learning	0	0	3	2	0	5	12	2.40
31	The mathematics division/department utilizes the following supplemental practices in its developmental mathematics courses…supplemental instruction	0	2	3	0	0	5	8	1.60
32	…tutoring	0	0	0	0	5	5	20	4.00
33	…math learning center	0	0	0	0	5	5	20	4.00
34	…student development course	1	0	1	1	2	5	13	2.60
35	…study skills workshops	1	0	1	2	1	5	12	2.40
36	The institution is actively engaged in the process for certification of its developmental education program and/or services...National Association of Developmental Education (NADE)	2	1	0	0	0	3	1	0.33
37	...College Reading and Learning Association (CRLA)	2	1	0	0	0	3	1	0.33
38	Intensive academic support is provided to developmental students who require 2 or more levels of developmental mathematics	0	1	1	1	1	4	10	2.50
39	DE students are provided with up-to-date and accessible information regarding state, district, and college policies that will impact their college experience such as placement exam score changes, change in course offerings or structure	0	0	1	1	2	4	13	3.25
40	DE students are provided with up-to-date and accessible information regarding academic support programs	0	0	0	2	3	5	18	3.60

College A is making a moderate effort overall in implementing effective practices in the instructional approaches and practices characteristic.

For the indicators that specifically address student learning outcomes and curriculum in developmental mathematics and mathematics, the college is making positive strides in learning and curricular development by clearly defining and articulating learning outcomes, developing common criteria and rubrics, and working

towards alignment of exit-level competencies in developmental mathematics with entry-level competencies in college mathematics. The college is also in partial implementation, or making a good effort, of teaching critical skills concepts and methods in the developmental mathematics curriculum.

College A is moving towards full implementation of instructional approaches that have proven effective such mastery learning and problem based learning. The college is making a moderate effort in deploying the following approaches: cooperative learning, collaborative learning, learning communities, accelerated learning, and contextual learning.

The college is primarily using three modes of delivery of it developmental mathematics course: lecture, hybrid, and online. Based on the inconsistent responses, there is not a clear indication that the college is offering instruction in the following ways: non-course based instruction, accelerated/Fast Track, math refresher or through Bridge programs. It is clear that the college has not implemented instruction in the following modes of delivery: emporium, self-paced instruction, individualized instruction, modules, or immersion.

There is indication that the mathematics division/department is not fully utilizing effective techniques/strategies in the developmental mathematics classroom. The responses indicate marginal to partial implementation of the following techniques/strategies in its developmental mathematics: frequent testing of students (at least 10 times a semester), faculty feedback on students' performance, the use of

assessments for students to reflect on their learning processes and goals, or the use of integrated technology and media to support student learning.

The use of supplemental practices outside of the classroom is utilized more than effective techniques/strategies inside the classroom. Developmental education students have access to a tutoring center and a math-learning center. Based on the responses, there is not a clear indication that supplemental instruction, a student development course or study skills workshops are available. Nor has the college taken the steps towards NADE or CRLA certification.

There is no indication that the college offers intensive academic support for the weakest developmental education student group, those that require two or more levels of developmental education. The college is moving towards full implementation of providing developmental education students with up-to-date information that is pertinent to their needs such as policy changes, course offerings, and academic support programs.

Based on the survey responses, College B is making a good effort in the implementation of effective practices (Table 4.45).

Table 4.45: College B-Instructional Approaches and Practices

College B Instructional Approaches and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has clearly defined REQUIRED student learning outcomes…for each developmental mathematics course	0	0	0	0	7	7	28	4.00
2	...for each college-level mathematics course	0	0	0	0	7	7	28	4.00
3	Faculty members have developed common criteria or rubrics that are used in ascertaining and documenting each student's level of attainment of required learning outcomes.	0	0	0	0	7	7	28	4.00
4	Faculty design curriculum and teaching strategies to ensure alignment with required student learning outcomes.	0	0	0	1	6	7	27	3.86
5	The developmental mathematics exit-level	0	0	0	0	7	7	28	4.00

	competencies are aligned with the college entry-level competencies in college mathematics.								
6	Faculty members clearly articulate learning outcomes at different levels of the developmental mathematics curriculum; consequently, prerequisites are clear and rational, and sequential levels are aligned with one another.	0	0	0	0	7	7	28	4.00
7	Critical thinking concepts and methods are taught in the developmental mathematics curriculum.	0	0	0	1	6	7	27	3.86
8	The mathematics division/department systematically utilizes the following instructional approaches in its developmental mathematics courses…cooperative learning	0	1	0	0	6	7	25	3.57
9	…collaborative learning	0	0	0	0	7	7	28	4.00
10	…learning communities	0	1	1	0	3	5	15	3.00
11	…accelerated learning	0	0	1	1	5	7	25	3.57
12	…contextual learning	0	0	0	1	5	6	23	3.83
13	…mastery learning	0	0	0	1	5	6	23	3.83
14	…problem based learning	0	0	0	1	5	6	23	3.83
15	The institution delivers developmental mathematics courses in a variety of ways…lecture	0	0	1	0	6	7	26	3.71
16	…hybrid (lecture and online)	2	1	0	1	3	7	16	2.29
17	…online	1	0	0	0	5	6	20	3.33
18	…emporium	6	0	0	0	0	6	0	0.00
19	…non-course based instruction	5	0	0	0	1	6	4	0.67
20	…self-paced instruction	3	1	1	1	0	6	6	1.00
21	…individualized instruction	3	1	1	1	0	6	6	1.00
22	…accelerated/Fast Track	1	0	0	2	3	6	18	3.00
23	…modules	2	0	0	2	2	6	14	2.33
24	…math refresher	1	0	0	3	3	7	21	3.00
25	…immersion	3	0	0	2	1	6	10	1.67
26	...Bridge programs	1	2	2	0	0	5	6	1.20
27	The mathematics division/department utilizes the following techniques/strategies in its developmental mathematics courses…frequent testing of students (at least 10 times a semester)	3	0	0	0	4	7	16	2.29
28	…frequent provision of feedback on students' academic performance	1	0	0	1	5	7	23	3.29
29	…students frequently engage in self-assessment and reflection on their learning processes and goals	1	0	1	1	4	7	21	3.00
30	…use of integrated technology and media to support student learning	1	0	2	0	4	7	20	2.86
31	The mathematics division/department utilizes the following supplemental practices in its developmental mathematics courses…supplemental instruction	3	0	0	0	4	7	16	2.29
32	…tutoring	0	0	0	0	7	7	28	4.00
33	…math learning center	0	0	0	0	7	7	28	4.00
34	…student development course	0	1	0	0	5	6	21	3.50
35	…study skills workshops	1	1	1	0	4	7	19	2.71
36	The institution is actively engaged in the	0	0	0	1	4	5	19	3.80

	process for certification of its developmental education program and/or services...National Association of Developmental Education (NADE)								
37	...College Reading and Learning Association (CRLA)	1	0	0	0	5	6	20	3.33
38	Intensive academic support is provided to developmental students who require 2 or more levels of developmental mathematics	0	1	0	3	3	7	22	3.14
39	DE students are provided with up-to-date and accessible information regarding state, district, and college policies that will impact their college experience such as placement exam score changes, change in course offerings or structure	2	0	0	1	4	7	19	2.71
40	DE students are provided with up-to-date and accessible information regarding academic support programs	0	0	0	1	6	7	27	3.86

College B is making a good effort overall in implementing effective practices in the instructional approaches and practices characteristic.

For the indicators that specifically address student learning outcomes and curriculum in developmental mathematics and mathematics, the college is making a strong effort in its implementation of the following practices: clearly defining and articulating learning outcomes developing common criteria and rubrics; and working towards alignment of exit-level competencies in developmental mathematics with entry-level competencies in college mathematics. The college is near full implementation, or making a strong effort, of teaching critical skills concepts and methods in the developmental mathematics curriculum.

College B is moving towards full implementation of instructional approaches that have proven effective such cooperative learning, collaborative learning, accelerated learning, contextual learning, mastery learning, and problem based learning. The college is making a good effort in deploying learning communities on its campus.

The college is primarily using two modes of delivery of it developmental mathematics course: lecture and online. The college is in marginal to full implementation of using acceleration/Fast Track and math refresher as a mode of delivery. Based on the inconsistent responses, there is not a clear indication that the college is delivering instruction by hybrid, modules, or immersion. Based on the responses, it appears the college is in a discussion and planning phase for implementing self-paced instruction, individualized instruction, and Bridge programs. It is clear that the college has not implemented instruction in the following modes of delivery: emporium and non-course based instruction.

There is indication that the mathematics division/department is utilizing effective techniques/strategies in the developmental mathematics classroom. The responses indicate the college is making a strong effort in implementing the use of faculty feedback on students' performance; the use of assessments for students to reflect on their learning processes and goals; and the use of integrated technology and media to support student learning. Based on the responses there is no clear indication that the use of frequent testing of students (at least 10 times a semester) is occurring in the classroom.

The use of supplemental practices outside of the classroom is being fully utilized at College B. Developmental education students' have access to a tutoring center, a math learning center, a student development course, and study skills workshops. There is not a clear indication that supplemental instruction is available to developmental mathematics students. The college has taken the significant steps towards full implementation of attaining NADE or CRLA certification.

The college is making a good effort towards providing intensive academic support for the weakest developmental education student group, those that require two or more levels of developmental education. The college is moving towards full implementation of providing developmental education students with up-to-date regarding academic support programs but less vigorous in providing information regarding federal, state, district, and college policies that may affect their college experience.

Based on the survey responses, College C is making a moderate effort in the implementation of effective practices (Table 4.46).

Table 4.46: College C-Instructional Approaches and Practices

College C Instructional Approaches and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has clearly defined REQUIRED student learning outcomes…for each developmental mathematics course	0	1	0	2	2	5	15	3.00
2	...for each college-level mathematics course	0	1	0	1	3	5	16	3.20
3	Faculty members have developed common criteria or rubrics that are used in ascertaining and documenting each student's level of attainment of required learning outcomes.	1	1	0	1	2	5	12	2.40
4	Faculty design curriculum and teaching strategies to ensure alignment with required student learning outcomes.	0	1	0	0	4	5	17	3.40
5	The developmental mathematics exit-level competencies are aligned with the college entry-level competencies in college mathematics.	0	1	0	2	2	5	15	3.00
6	Faculty members clearly articulate learning outcomes at different levels of the developmental mathematics curriculum; consequently, prerequisites are clear and rational, and sequential levels are aligned with one another.	0	1	0	2	2	5	15	3.00
7	Critical thinking concepts and methods are taught in the developmental mathematics curriculum.	0	0	1	1	3	5	17	3.40
8	The mathematics division/department systematically utilizes the following instructional approaches in its developmental mathematics courses…cooperative learning	0	1	3	1	0	5	10	2.00
9	…collaborative learning	0	0	3	2	0	5	12	2.40
10	…learning communities	0	2	1	2	0	5	10	2.00
11	…accelerated learning	0	2	2	1	0	5	9	1.80
12	…contextual learning	0	1	1	2	0	4	9	2.25
13	…mastery learning	0	1	1	2	0	4	9	2.25

14	…problem based learning	0	0	2	2	1	5	14	2.80
15	The institution delivers developmental mathematics courses in a variety of ways…lecture	0	0	0	1	4	5	19	3.80
16	…hybrid (lecture and online)	2	0	0	2	0	4	6	1.50
17	…online	0	0	0	0	5	5	20	4.00
18	…emporium	4	0	0	0	0	4	0	0.00
19	…non-course based instruction	4	0	0	0	0	4	0	0.00
20	…self-paced instruction	1	2	2	0	0	5	6	1.20
21	…individualized instruction	1	1	2	0	1	5	9	1.80
22	…accelerated/Fast Track	1	2	2	0	0	5	6	1.20
23	…modules	1	1	1	2	0	5	9	1.80
24	…math refresher	1	1	1	1	1	5	10	2.00
25	…immersion	2	1	1	0	0	4	3	0.75
26	...Bridge programs	2	1	1	0	0	4	3	0.75
27	The mathematics division/department utilizes the following techniques/strategies in its developmental mathematics courses…frequent testing of students (at least 10 times a semester)	3	0	0	1	1	5	7	1.40
28	…frequent provision of feedback on students' academic performance	0	0	2	1	2	5	15	3.00
29	…students frequently engage in self-assessment and reflection on their learning processes and goals	2	0	1	2	0	5	8	1.60
30	…use of integrated technology and media to support student learning	0	0	0	2	3	5	18	3.60
31	The mathematics division/department utilizes the following supplemental practices in its developmental mathematics courses…supplemental instruction	2	0	0	1	2	5	11	2.20
32	…tutoring	0	0	0	0	5	5	20	4.00
33	…math learning center	0	0	0	0	5	5	20	4.00
34	…student development course	0	1	1	0	2	4	11	2.75
35	…study skills workshops	0	0	1	2	2	5	16	3.20
36	The institution is actively engaged in the process for certification of its developmental education program and/or services...National Association of Developmental Education (NADE)	0	3	0	0	1	4	7	1.75
37	...College Reading and Learning Association (CRLA)	1	1	0	2	0	4	7	1.75
38	Intensive academic support is provided to developmental students who require 2 or more levels of developmental mathematics	1	0	1	1	2	5	13	2.60
39	DE students are provided with up-to-date and accessible information regarding state, district, and college policies that will impact their college experience such as placement exam score changes, change in course offerings or structure	1	1	1	1	1	5	10	2.00
40	DE students are provided with up-to-date and accessible information regarding academic support programs	0	0	0	3	2	5	17	3.40

College C is making a moderate effort overall in implementing effective practices in the instructional approaches and practices characteristic.

For the indicators that specifically address student learning outcomes and curriculum, the college is making a strong effort in learning and curricular development by designing curriculum and teaching strategies to ensure alignment with required student learning outcomes and is making a good effort working towards alignment of exit-level competencies in developmental mathematics with entry-level competencies in college mathematics. There is no clear indication that faculty members have developed common criteria and rubrics to ascertain and document student attainment of required learning outcomes. The college has clearly defined and articulated learning outcomes for each college-level mathematics course, but has done less so for developmental mathematics. The college is making a strong effort towards the teaching of critical skills concepts and methods in the developmental mathematics curriculum.

There is indication that the mathematics division/department is not fully utilizing effective instructional approaches in the developmental mathematics classroom. Based on the responses, College C is not in full implementation of any instructional approach. The college is making a good effort in deploying the following approaches: collaborative learning and problem based learning.

The college is primarily using two modes of delivery of it developmental mathematics course: lecture and online. Based on the inconsistent responses, there is no clear indication that the college is offering instruction through hybrid, self-paced, individualized instruction, accelerated/Fast Track, modules, math refresher, immersion,

or Bridge programs. It is clear that the college has not implemented instruction in the following modes of delivery: emporium and non-course based instruction.

The mathematics division/department is making a strong effort in the use of integrated technology and media to support student learning and a good effort in providing faculty feedback to students of their performance. The department/division is making a minimal to marginal effort in using the following techniques/strategies in its developmental mathematics: frequent testing of students (at least 10 times a semester) and the use of assessments for students to reflect on their learning processes and goals.

The use of supplemental practices outside of the classroom is utilized more than effective techniques/strategies inside the classroom. Developmental education students have access to a tutoring center, and a math-learning center. The mathematics division/department is also making a good effort in providing study skills workshops to developmental education students Based on the responses, there is not a clear indication that supplemental instruction or a student development course are available to students. The college has taken the steps towards attaining NADE and CRLA certification.

The college is moving towards full implementation (strong effort) of providing developmental education students with up-to-date information on academic support programs. The college is making a good effort towards providing intensive academic support for the weakest developmental education student group, those that require two or more levels of developmental education. This is not indication that the college is providing developmental education students with up-to-date information regarding federal, state, district, and college policies that may affect their college experience.

Based on the survey responses, College D is making a moderate effort in the implementation of effective practices (Table 4.47).

Table 4.47: College D-Instructional Approaches and Practices

College D Instructional Approaches and Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution has clearly defined REQUIRED student learning outcomes…for each developmental mathematics course	0	0	0	1	3	4	15	3.75
2	...for each college-level mathematics course	0	0	0	1	3	4	15	3.75
3	Faculty members have developed common criteria or rubrics that are used in ascertaining and documenting each student's level of attainment of required learning outcomes.	1	0	1	1	1	4	9	2.25
4	Faculty design curriculum and teaching strategies to ensure alignment with required student learning outcomes.	0	1	0	1	2	4	12	3.00
5	The developmental mathematics exit-level competencies are aligned with the college entry-level competencies in college mathematics.	1	0	0	0	3	4	12	3.00
6	Faculty members clearly articulate learning outcomes at different levels of the developmental mathematics curriculum; consequently, prerequisites are clear and rational, and sequential levels are aligned with one another.	1	0	0	0	3	4	12	3.00
7	Critical thinking concepts and methods are taught in the developmental mathematics curriculum.	1	0	0	0	3	4	12	3.00
8	The mathematics division/department systematically utilizes the following instructional approaches in its developmental mathematics courses…cooperative learning	0	0	1	2	0	3	8	2.67
9	…collaborative learning	0	0	1	2	0	3	8	2.67
10	…learning communities	0	0	0	3	0	3	9	3.00
11	…accelerated learning	0	0	1	2	0	3	8	2.67
12	…contextual learning	0	0	1	2	0	3	8	2.67
13	…mastery learning	1	0	0	2	0	3	6	2.00
14	…problem based learning	0	1	0	1	0	2	4	2.00
15	The institution delivers developmental mathematics courses in a variety of ways…lecture	0	0	0	0	3	3	12	4.00
16	…hybrid (lecture and online)	1	0	2	0	1	4	8	2.00
17	…online	0	0	1	0	3	4	14	3.50
18	…emporium	3	1	0	0	0	4	1	0.25
19	…non-course based instruction	3	1	0	0	0	4	1	0.25
20	…self-paced instruction	3	1	0	0	0	4	1	0.25
21	…individualized instruction	3	1	0	0	0	4	1	0.25
22	…accelerated/Fast Track	0	3	1	0	0	4	5	1.25
23	…modules	1	2	0	0	0	3	2	0.67
24	…math refresher	0	0	1	2	1	4	12	3.00
25	…immersion	2	1	0	0	0	3	1	0.33

26	...Bridge programs	0	0	1	2	1	4	12	3.00
27	The mathematics division/department utilizes the following techniques/strategies in its developmental mathematics courses…frequent testing of students (at least 10 times a semester)	2	0	1	0	0	3	2	0.67
28	…frequent provision of feedback on students' academic performance	0	1	0	1	1	3	8	2.67
29	…students frequently engage in self-assessment and reflection on their learning processes and goals	0	1	1	1	0	3	6	2.00
30	…use of integrated technology and media to support student learning	0	1	1	1	0	3	6	2.00
31	The mathematics division/department utilizes the following supplemental practices in its developmental mathematics courses…supplemental instruction	2	0	0	1	0	3	3	1.00
32	…tutoring	0	0	0	1	3	4	15	3.75
33	…math learning center	1	1	0	0	2	4	9	2.25
34	…student development course	0	1	0	1	2	4	12	3.00
35	…study skills workshops	1	2	0	1	0	4	5	1.25
36	The institution is actively engaged in the process for certification of its developmental education program and/or services...National Association of Developmental Education (NADE)	1	2	0	0	0	3	2	0.67
37	...College Reading and Learning Association (CRLA)	1	2	0	0	0	3	2	0.67
38	Intensive academic support is provided to developmental students who require 2 or more levels of developmental mathematics	0	1	2	1	0	4	8	2.00
39	DE students are provided with up-to-date and accessible information regarding state, district, and college policies that will impact their college experience such as placement exam score changes, change in course offerings or structure	0	1	1	0	3	5	15	3.00
40	DE students are provided with up-to-date and accessible information regarding academic support programs	0	1	1	1	2	5	14	2.80

College D is making a moderate effort overall in implementing effective practices in the instructional approaches and practices characteristic.

For the indicators that specifically address student learning outcomes and curriculum in developmental mathematics and mathematics, the college is making positive strides in learning and curricular development by clearly defining and articulating learning outcomes; working towards alignment of curriculum and teaching

with student learning outcomes, and aligning exit-level competencies in developmental mathematics with entry-level competencies in college mathematics. The college is making a moderate effort in developing common criteria and rubrics to ascertain and document each student's level of attainment of required learning outcomes. The college is making a good effort towards the teaching of critical skills concepts and methods in the developmental mathematics curriculum.

College D has not fully implemented any instructional approaches that have been identified as effective practices. The following approaches are in marginal to partial implementation: cooperative learning, collaborative learning, learning communities, accelerated learning, and contextual learning. The college is making a moderate effort in deploying the following approaches: mastery learning and problem-based learning.

The college is primarily using two modes of delivery of it developmental mathematics course: lecture and online. The college is making a good effort towards the use of math refresher and Bridge programs. Based on the inconsistent responses, there is not a clear indication that the college is offering instruction in the following ways: hybrid or accelerated/Fast Track. It is clear that the college has not implemented instruction using the following modes of delivery: emporium, non-course based instruction, self-paced instruction, individualized instruction, modules, or immersion.

Based on the responses, there is no clear indication that the mathematics division/department is fully utilizing effective techniques/strategies in the developmental mathematics classroom. The implementation of classroom techniques/strategies appears to be in the planning phase with minimal usage.

The use of supplemental practices outside of the classroom is utilized more than classroom techniques/strategies. Developmental education students have access to a tutoring center and student development courses. Based on the responses, there exists a math-learning center but it is not widely known across the college. There is no clear indication that supplemental instruction or study skills workshops are available. Nor has the college taken the steps towards NADE or CRLA certification.

The college is in partial implementation of providing intensive academic support for the weakest developmental education student group, those that require two or more levels of developmental education. The college is moving towards full implementation of providing developmental education students with up-to-date information that is pertinent to their needs such as policy changes, course offerings, and academic support programs.

These data demonstrates that College B is doing a better job of instituting effective instructional approaches and practices as compared to the other colleges (Table 4.48).

Table 4.48: Instructional Approaches and Practices- Ranking of Colleges by Response Mean Scores

Ranking Level		**1**	**2**	**3**	**4**	
College		College B	College C	College A	College D	**Response Mean Score by Indicator**
1	The institution has clearly defined REQUIRED student learning outcomes…for each developmental mathematics course	4.00	3.00	3.80	3.75	**3.64**
2	...for each college-level mathematics course	4.00	3.20	3.80	3.75	**3.69**
3	Faculty members have developed common criteria or rubrics that are used in ascertaining and documenting each student's level of attainment of required learning outcomes.	4.00	2.40	2.60	2.25	**2.81**
4	Faculty design curriculum and teaching strategies to ensure alignment with required student learning outcomes.	3.86	3.40	2.80	3.00	**3.27**
5	The developmental mathematics exit-level competencies are aligned with the college entry-level competencies in college mathematics.	4.00	3.00	3.60	3.00	**3.40**
6	Faculty members clearly articulate learning outcomes at different levels of the developmental mathematics curriculum; consequently, prerequisites are clear and rational, and sequential levels are aligned with one another.	4.00	3.00	3.40	3.00	**3.35**
7	Critical thinking concepts and methods are taught in the developmental mathematics curriculum.	3.86	3.40	2.80	3.00	**3.27**
8	The mathematics division/department systematically utilizes the following instructional approaches in its developmental mathematics courses…cooperative learning	3.57	2.00	2.20	2.67	**2.61**
9	…collaborative learning	4.00	2.40	2.20	2.67	**2.82**
10	…learning communities	3.00	2.00	2.00	3.00	**2.50**
11	…accelerated learning	3.57	1.80	2.20	2.67	**2.56**
12	…contextual learning	3.83	2.25	1.80	2.67	**2.64**
13	…mastery learning	3.83	2.25	2.75	2.00	**2.71**
14	…problem based learning	3.83	2.80	2.60	2.00	**2.81**
15	The institution delivers developmental mathematics courses in a variety of ways…lecture	3.71	3.80	4.00	4.00	**3.88**
16	…hybrid (lecture and online)	2.29	1.50	3.60	2.00	**2.35**
17	…online	3.33	4.00	3.80	3.50	**3.66**
18	…emporium	0.00	0.00	0.00	0.25	**0.06**
19	…non-course based instruction	0.67	0.00	1.75	0.25	**0.67**
20	…self-paced instruction	1.00	1.20	0.50	0.25	**0.74**

21	…individualized instruction	1.00	1.80	0.00	0.25	**0.76**
22	…accelerated/Fast Track	3.00	1.20	2.00	1.25	**1.86**
23	…modules	2.33	1.80	0.50	0.67	**1.33**
24	…math refresher	3.00	2.00	2.00	3.00	**2.50**
25	…immersion	1.67	0.75	0.00	0.33	**0.69**
26	...Bridge programs	1.20	0.75	1.67	3.00	**1.66**
27	The mathematics division/department utilizes the following techniques/strategies in its developmental mathematics courses…frequent testing of students (at least 10 times a semester)	2.29	1.40	1.80	0.67	**1.54**
28	…frequent provision of feedback on students' academic performance	3.29	3.00	2.60	2.67	**2.89**
29	…students frequently engage in self-assessment and reflection on their learning processes and goals	3.00	1.60	1.60	2.00	**2.05**
30	…use of integrated technology and media to support student learning	2.86	3.60	2.40	2.00	**2.72**
31	The mathematics division/department utilizes the following supplemental practices in its developmental mathematics courses…supplemental instruction	2.29	2.20	1.60	1.00	**1.77**
32	…tutoring	4.00	4.00	4.00	3.75	**3.94**
33	…math learning center	4.00	4.00	4.00	2.25	**3.56**
34	…student development course	3.50	2.75	2.60	3.00	**2.96**
35	…study skills workshops	2.71	3.20	2.40	1.25	**2.39**
36	The institution is actively engaged in the process for certification of its developmental education program and/or services...National Association of Developmental Education (NADE)	3.80	1.75	0.33	0.67	**1.64**
37	...College Reading and Learning Association (CRLA)	3.33	1.75	0.33	0.67	**1.52**
38	Intensive academic support is provided to developmental students who require 2 or more levels of developmental mathematics	3.14	2.60	2.50	2.00	**2.56**
39	DE students are provided with up-to-date and accessible information regarding state, district, and college policies that will impact their college experience such as placement exam score changes, change in course offerings or structure	2.71	2.00	3.25	3.00	**2.74**
40	DE students are provided with up-to-date and accessible information regarding academic support programs	3.86	3.40	3.60	2.80	**3.42**
	Average Response Mean Scores	**3.03**	**2.32**	**2.28**	**2.15**	

For the indicators that specifically address student learning outcomes and curriculum in developmental mathematics and college-level mathematics, all colleges are

making positive strides implementing effective practices. The following practices are as follows: clearly defining and articulating learning outcomes; working towards alignment of curriculum and teaching; aligning exit-level competencies in developmental mathematics with entry-level competencies in college mathematics; and teaching of critical skills concepts and methods in the developmental mathematics curriculum. College B is making a strong effort in developing common criteria and rubrics to ascertain and document each student's level of attainment of required learning outcomes, while the other colleges lag behind in this effort.

The mathematics division/department of College B is making significant strides in implementing instructional approaches that have been identified as effective, while the other colleges have yet to fully consider this area for needed change and innovation. Of all the approaches, learning communities and accelerated learning are the least used. In addition, College B is making a strong effort to implement all the identified approaches although learning communities is the least used.

All colleges are primarily using two modes of delivery of its developmental mathematics course: lecture and online. The colleges are venturing into the use of math refresher and hybrid delivery. Another significant delivery model is acceleration/Fast Track whereas College B is moving towards full implementation as opposed to the other colleges who have yet to move beyond planning.

There is no clear indication that the faculty members of their mathematics division/departments of the all the colleges are fully utilizing effective techniques/strategies in the developmental mathematics classroom. The implementation

of classroom techniques/strategies appears to be in the planning phase to moderate usage. The provision of frequent feedback to students based on their academic performance and the use of integrated technology and media to support learning are the two techniques/strategies that are receiving the most attention from all the colleges.

The use of supplemental practices outside of the classroom is utilized more than classroom techniques/strategies. Developmental education students at all colleges have access to a tutoring center and math learning centers. The colleges vary in the level of implementation of student development courses from moderate to full implementation. Supplemental instruction is moderate to no attention at the colleges. Only College B has taken the steps towards NADE or CRLA certification, which is a significant endeavor.

It appears that the colleges are discussing and /or planning for the provision of intensive academic support for the weakest developmental education student group, those that require two or more levels of developmental education, and providing developmental education students with up-to-date information that is pertinent to their needs such as policy changes that will affect their college experience. All colleges are making a good to strong effort in providing up-to-date and accessible information regarding academic support programs to developmental education students.

Student support practices.

The Student Support Practices characteristic is comprised of twelve indicators. Effective colleges are actively engaged in pre-enrollment activities with the local junior and high schools. Student support services programs offer specialized and targeted support services specifically designed for the developmental education student such as

peer and faculty mentors, and support groups, case management and an early alert system. A case management approach is used to monitor academic progress and performance of developmental mathematics students.

Developmental education students are required to have an individualized education plan and placement tests are used as a diagnostic tool to help advisors assist developmental education students in developing individualized education plans.

Developmental education students are provided with up-to-date and accessible information regarding state and college policies that will affect their college experience such as financial aid limitations, drop/withdrawal policies, and information regarding student support services program; and strong efforts are made in informing the developmental education student about financial aid programs.

Based on the survey responses, College A is making a good effort in the implementation of effective practices (Table 4.49).

Table 4.49: College A-Student Support Practices

College A Student Support Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	This college is actively engaged in pre-enrollment activities with the local junior and high schools.	0	0	0	2	3	5	18	3.60
2	Specialized and targeted support services have been designed for the developmental education student.	0	0	1	3	1	5	15	3.00
3	Peer and faculty mentors, and support groups are offered at this college for developmental education students.	2	0	0	2	0	4	6	1.50
4	This college makes a strong effort in informing the developmental education student about financial aid programs.	0	0	0	1	3	4	15	3.75
5	Developmental education students are required to have an individualized education plan.	2	0	2	0	0	4	4	1.00
6	Placement tests are used as a diagnostic tool to help advisors assist developmental education students in developing	0	0	1	2	2	5	16	3.20

	individualized education plans.								
7	Academic performance (like grades and attendance) of developmental education students is systematically monitored.	0	0	2	3	0	5	13	2.60
8	An early alert system is used specifically for developmental mathematics students.	0	0	3	1	0	4	9	2.25
9	A case management approach is used to monitor academic progress and performance of developmental mathematics students.	1	0	2	0	0	3	4	1.33
10	Intensive student support is provided to developmental students who require 2 or more levels of developmental mathematics.	0	0	1	2	1	4	12	3.00
11	Developmental education students are provided with up-to-date and accessible information regarding state and college policies that will impact their college experience such as financial aid limitations, drop/withdrawal policies, etc.	0	0	2	1	2	5	15	3.00
12	Developmental education students are provided with up-to-date and accessible information regarding student support services programs.	0	0	1	2	2	5	16	3.20

College A is making a good effort overall in implementing effective practices in the instructional approaches and practices characteristic.

The college is making a strong effort in its move towards full implementation of the following practices: actively engaging in pre-enrollment activities with the local junior and high schools; providing information to developmental education students about financial aid programs; using placement tests as a diagnostic tool to help advisors develop an individualized education plan; and providing up-to-date and accessible information regarding student support service programs.

The college is making a good effort in its partial implementation to full implementation of the following practices: designing specialized and targeted support services; systematically monitoring academic performance; providing intensive support for students who require two or levels of developmental mathematics; and providing

students with up-to-date and accessible information regarding policies that may affect their college experience.

The use of an early alert system specifically for developmental mathematics students is being marginally implemented. There is no clear indication that the college offers a mentoring program and support groups; the use of a case management approach for monitoring academic progress and performance; or require students to an individualized education plan (IEP) although it is required for colleges to assist students with IEP's under the Texas Success Initiative.

Based on the survey responses, College B is making a good effort in the implementation of effective practices (Table 4.50).

Table 4.50: College B-Student Support Practices

College B Student Support Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	This college is actively engaged in pre-enrollment activities with the local junior and high schools.	0	0	1	1	5	7	25	3.57
2	Specialized and targeted support services have been designed for the developmental education student.	0	1	0	1	5	7	24	3.43
3	Peer and faculty mentors, and support groups are offered at this college for developmental education students.	1	1	1	2	2	7	17	2.43
4	This college makes a strong effort in informing the developmental education student about financial aid programs.	1	0	1	1	3	6	17	2.83
5	Developmental education students are required to have an individualized education plan.	1	0	1	2	2	6	16	2.67
6	Placement tests are used as a diagnostic tool to help advisors assist developmental education students in developing individualized education plans.	1	0	0	1	4	6	19	3.17
7	Academic performance (like grades and attendance) of developmental education students is systematically monitored.	0	0	0	0	6	6	24	4.00
8	An early alert system is used specifically for developmental mathematics students.	0	2	0	1	3	6	17	2.83

9	A case management approach is used to monitor academic progress and performance of developmental mathematics students.	1	1	0	1	2	5	12	2.40
10	Intensive student support is provided to developmental students who require 2 or more levels of developmental mathematics.	0	1	1	1	3	6	18	3.00
11	Developmental education students are provided with up-to-date and accessible information regarding state and college policies that will impact their college experience such as financial aid limitations, drop/withdrawal policies, etc.	1	0	0	1	4	6	19	3.17
12	Developmental education students are provided with up-to-date and accessible information regarding student support services programs.	0	0	0	0	6	6	24	4.00

College B is making a good effort overall in implementing effective practices in the instructional approaches and practices characteristic.

The college is making a strong effort in implementing the following practices: actively engaging in pre-enrollment activities with the local junior and high schools; designing specialized and targeted support services and systematically monitoring academic performance for developmental education students; and providing up-to-date and accessible information regarding its student support service programs.

The college is making a good effort towards implementation of the following practices: offering mentoring and support groups; providing information to developmental education students about financial aid programs; requiring students to have an IEP and using placement tests as a diagnostic tool to help advisors develop an IEP; and the use of an early alert system. In addition, the college is implementing a case management approach for monitoring academic progress and performance; providing intensive support for students who require two or levels of developmental mathematics;

and providing students with up-to-date and accessible information regarding policies that may affect their college experience.

Based on the survey responses, College C is making a good effort in the implementation of effective practices (Table 4.51).

Table 4.51: College C-Student Support Practices

College C Student Support Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	This college is actively engaged in pre-enrollment activities with the local junior and high schools.	0	2	1	0	2	5	12	2.40
2	Specialized and targeted support services have been designed for the developmental education student.	0	1	1	1	2	5	14	2.80
3	Peer and faculty mentors, and support groups are offered at this college for developmental education students.	1	1	1	2	0	5	9	1.80
4	This college makes a strong effort in informing the developmental education student about financial aid programs.	0	0	0	2	3	5	18	3.60
5	Developmental education students are required to have an individualized education plan.	1	3	0	0	1	5	7	1.40
6	Placement tests are used as a diagnostic tool to help advisors assist developmental education students in developing individualized education plans.	0	0	1	1	3	5	17	3.40
7	Academic performance (like grades and attendance) of developmental education students is systematically monitored.	0	1	1	1	2	5	14	2.80
8	An early alert system is used specifically for developmental mathematics students.	0	1	1	1	2	5	14	2.80
9	A case management approach is used to monitor academic progress and performance of developmental mathematics students.	1	3	0	0	1	5	7	1.40
10	Intensive student support is provided to developmental students who require 2 or more levels of developmental mathematics.	1	0	2	0	2	5	12	2.40
11	Developmental education students are provided with up-to-date and accessible information regarding state and college policies that will impact their college experience such as financial aid limitations, drop/withdrawal policies, etc.	0	0	1	3	1	5	15	3.00
12	Developmental education students are provided with up-to-date and accessible information regarding student support services programs.	0	0	1	2	2	5	16	3.20

College C is making a good effort overall in implementing effective practices in the instructional approaches and practices characteristic.

The college is making a strong effort in its implementation of the following practices: providing information to developmental education students about financial aid programs; using placement tests as a diagnostic tool to help advisors develop an IEP; and providing up-to-date and accessible information regarding its student support service programs.

The college is making a good effort in its implementation of the following practices: actively engaging in pre-enrollment activities with the local junior and high schools; designing specialized and targeted support services; systematically monitoring academic performance; and utilizing an early alert system specifically for developmental mathematics students. In addition, the college is making a good effort in providing intensive support for students who require two or levels of developmental mathematics; and providing students with up-to-date and accessible information regarding policies that may affect their college experience.

There is no clear indication that the college offers a mentoring program and support groups; the use of a case management approach for monitoring academic progress and performance; or require students to an individualized education plan (IEP) although it is required for colleges to assist students with IEP's under the Texas Success Initiative.

Based on the survey responses, College D is making a moderate effort in the implementation of effective practices (Table 4.52).

Table 4.52: College D-Student Support Practices

College D Student Support Practices		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	This college is actively engaged in pre-enrollment activities with the local junior and high schools.	0	0	1	1	3	5	17	3.40
2	Specialized and targeted support services have been designed for the developmental education student.	0	0	1	2	2	5	16	3.20
3	Peer and faculty mentors, and support groups are offered at this college for developmental education students.	1	0	1	1	1	4	9	2.25
4	This college makes a strong effort in informing the developmental education student about financial aid programs.	0	0	1	2	2	5	16	3.20
5	Developmental education students are required to have an individualized education plan.	2	1	1	0	1	5	7	1.40
6	Placement tests are used as a diagnostic tool to help advisors assist developmental education students in developing individualized education plans.	2	0	0	1	2	5	11	2.20
7	Academic performance (like grades and attendance) of developmental education students is systematically monitored.	2	1	0	1	1	5	8	1.60
8	An early alert system is used specifically for developmental mathematics students.	3	0	0	2	0	5	6	1.20
9	A case management approach is used to monitor academic progress and performance of developmental mathematics students.	3	0	1	1	0	5	5	1.00
10	Intensive student support is provided to developmental students who require 2 or more levels of developmental mathematics.	2	0	2	0	1	5	8	1.60
11	Developmental education students are provided with up-to-date and accessible information regarding state and college policies that will impact their college experience such as financial aid limitations, drop/withdrawal policies, etc.	0	0	1	1	3	5	17	3.40
12	Developmental education students are provided with up-to-date and accessible information regarding student support services programs.	0	0	1	1	3	5	17	3.40

College D is making a moderate effort overall in implementing effective practices in the instructional approaches and practices characteristic.

The college is making a strong effort in its implementation of the following practices: actively engaging in pre-enrollment activities with the local junior and high

schools; designing specialized and targeted support services; providing information to developmental education students about financial aid programs; and providing up-to-date and accessible information.

The college is making a moderate effort in its implementation of the following practices: using placement tests as a diagnostic tool to help advisors develop an IEP; systematically monitoring academic performance; and providing intensive support for students who require two or levels of developmental mathematics.

There is no clear indication that the college requires students to an individualized education plan (IEP) although it is required for colleges to assist students with IEP's under the Texas Success Initiative; utilizes an early alert system; or uses a case management approach for monitoring student academic progress and performance

These data demonstrates that College B is doing a better job of instituting effective instructional approaches and practices as compared to the other colleges (Table 4.53).

Table 4.53: Student Support Practices- Ranking of Colleges by Response Mean Score

Ranking Level		**1**	**2**	**3**	**4**	
College		College B	College A	College C	College D	**Response Mean Score by Indicator**
1	This college is actively engaged in pre-enrollment activities with the local junior and high schools.	3.57	3.60	2.40	3.40	**3.24**
2	Specialized and targeted support services have been designed for the developmental education student.	3.43	3.00	2.80	3.20	**3.11**
3	Peer and faculty mentors, and support groups are offered at this college for developmental education students.	2.43	1.50	1.80	2.25	**2.00**

4	This college makes a strong effort in informing the developmental education student about financial aid programs.	2.83	3.75	3.60	3.20	**3.35**
5	Developmental education students are required to have an individualized education plan.	2.67	1.00	1.40	1.40	**1.62**
6	Placement tests are used as a diagnostic tool to help advisors assist developmental education students in developing individualized education plans.	3.17	3.20	3.40	2.20	**2.99**
7	Academic performance (like grades and attendance) of developmental education students is systematically monitored.	4.00	2.60	2.80	1.60	**2.75**
8	An early alert system is used specifically for developmental mathematics students.	2.83	2.25	2.80	1.20	**2.27**
9	A case management approach is used to monitor academic progress and performance of developmental mathematics students.	2.40	1.33	1.40	1.00	**1.53**
10	Intensive student support is provided to developmental students who require 2 or more levels of developmental mathematics.	3.00	3.00	2.40	1.60	**2.50**
11	Developmental education students are provided with up-to-date and accessible information regarding state and college policies that will impact their college experience such as financial aid limitations, drop/withdrawal policies, etc.	3.17	3.00	3.00	3.40	**3.14**
12	Developmental education students are provided with up-to-date and accessible information regarding student support services programs.	4.00	3.20	3.20	3.40	**3.45**
	Average Response Mean Scores	**3.12**	**2.62**	**2.58**	**2.32**	

Strong efforts are being made in the implementation of the following practices by all colleges: actively engaging in pre-enrollment activities with the local junior and high schools; providing information to developmental education students about financial aid programs; and providing students with up-to-date and accessible information regarding policies that may impact their college experience and student support service programs.

The least utilized practices by all colleges is the offering of mentoring and support groups, and the use of a case management approach for monitoring academic progress and performance. In addition, College B is in moderate implementation of requiring students to have an individualized education plan (IEP), and less so by the other colleges, even though it is required for colleges to assist students with IEP's under the Texas Success Initiative.

The college is in full implementation of systematically monitoring academic performance, while the other colleges are in moderate to partial implementation.

Grant-supported programs.

The Grant-Supported characteristic contains six indicators that describe grant initiatives with a prescribed focus set by the source and/or funding entity. The focus may be at a macro or micro level. The grant programs identified in this study are institutional, instructional practice, and student focused.

Effective colleges use grant funds to enhance and expand programs and services that serve developmental education students. These grants are generated from external and internal sources such as federal and state government entities, foundations, and local non-profit organizations. Many of these projects originate through external funding sources that are short-lived. At times, colleges and/or districts seek internal resources in order to sustain and expand these projects.

Grant initiatives that have an institutional focus include the Achieving the Dream initiative, Title III, and Title V. The Achieving the Dream initiative has received financial support through various foundations and the college/district is also bound to provide

fiscal support. Title III, Title V, and TRIO programs are federally supported. Title III-Institutional Aid for Minority Serving Institutions provides support for institutions that serve large percentages of minority and disadvantaged students. Title V- Developing Institutions provides support for institutions that serve a large percentage of Hispanics (Hispanic Serving Institutions).

Course redesign projects focus on instructional practices, and Bridge programs focus on both instruction and targeted students services.

TRIO programs, funded under Title IV, are educational opportunity outreach programs that target students from disadvantaged backgrounds, more specifically first-generation and low-income students. The services provided under TRIO are granted to strictly serve a target population, thus small numbers of students typically benefit from this program. These programs are known for implementing innovative practices and have shown tremendous success but colleges have had difficulty bringing these programs to scale.

Based on the survey responses, College A is making a good effort in the implementation of effective practices (Table 4.54).

Table 4.54: College A-Grant Supported Programs

College A Grant Supported Programs		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution utilizes grant funds to enhance and expand programs and services that serve developmental education students...Achieving the Dream	0	0	0	2	2	4	14	3.50
2	...Bridge programs	0	0	0	2	2	4	14	3.50
3	...Course redesign projects	1	0	0	2	0	3	6	2.00
4	...Title III	1	0	0	1	0	2	3	1.50
5	...Title V	0	0	0	1	3	4	15	3.75
6	...TRIO programs	0	0	0	1	3	4	15	3.75

College A is making a strong effort in the implementation of grant-supported programs and has four initiatives on its campus, which according to the responses serve developmental education students. The UCCD was selected to participate in Achieving the Dream in 2004 and continues to participate. College A is designated as a Hispanic Serving Institution (Title V). The college is making a strong effort towards full implementation of Bridge programs and TRIO programs. According to the three responses, the college is in partial implementation of course redesign, although one response listed no implementation.

It is unclear, based on the responses, if the college is designated as a Title III institution.

Based on the survey responses, College B is making a moderate effort in the implementation of effective practices (Table 4.55).

Table 4.55: College B-Grant Supported Programs

College B Grant Supported Programs		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution utilizes grant funds to enhance and expand programs and services that serve developmental education students...Achieving the Dream	1	0	0	0	4	5	16	3.20
2	...Bridge programs	0	2	1	1	1	5	11	2.20
3	...Course redesign projects	1	1	0	2	1	5	11	2.20
4	...Title III	3	1	0	0	1	5	5	1.00
5	...Title V	0	0	0	0	5	5	20	4.00
6	...TRIO programs	3	1	0	0	1	5	5	1.00

College B is making a strong effort in the implementation of grant-supported programs and has two initiatives on its campus, which according to the responses serve developmental education students. The UCCD, thus all colleges, was selected to participate in Achieving the Dream in 2004 and continues to participate. College B is designated as a Hispanic Serving Institution (Title V).

Based on the majoring of responses, Bridge programs or course redesign projects are under discussion to partial implementation; is not a designated as a Title III institution; nor does it have a TRIO program.

Based on the survey responses, College C is making a moderate effort in the implementation of effective practices (Table 4.56).

Table 4.56: College C-Grant Supported Programs

College C Grant Supported Programs		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution utilizes grant funds to enhance and expand programs and services that serve developmental education students...Achieving the Dream	0	0	0	1	4	5	19	3.80
2	...Bridge programs	0	0	3	2	0	5	12	2.40
3	...Course redesign projects	0	1	1	1	0	3	6	2.00
4	...Title III	0	0	0	0	4	4	16	4.00
5	...Title V	3	0	0	0	1	4	4	1.00
6	...TRIO programs	3	0	1	0	0	4	2	0.50

College C is making a strong effort in the implementation of grant-supported programs and has two initiatives on its campus, which according to the responses serve developmental education students. The UCCD was selected to participate in Achieving the Dream in 2004 and continues to participate. College C is designated as a Historically Black College.

Bridge programs or course redesign projects are under discussion to partial implementation. Based on the majority of the responses, the college is not a designated as a Hispanic Serving Institution (Title V), nor does it have a TRIO program.

Based on the survey responses, College D is making a moderate effort in the implementation of effective practices (Table 4.57).

Table 4.57: College D-Grant Supported Programs

College D Grant Supported Programs		Response Scale					Total Responses	Weighted	Response Mean Score
		NI	UD	MI	PI	FI			
1	The institution utilizes grant funds to enhance and expand programs and services that serve developmental education students...Achieving the Dream	0	0	0	1	4	5	19	3.80
2	...Bridge programs	1	1	1	0	1	4	7	1.75
3	...Course redesign projects	1	3	0	0	0	4	3	0.75
4	...Title III	2	0	0	0	1	3	4	1.33
5	...Title V	0	1	0	1	1	3	8	2.67
6	...TRIO programs	0	1	1	1	0	3	6	2.00

College D is making a strong effort in the implementation of grant-supported programs and has one initiative on its campus. The UCCD was selected to participate in Achieving the Dream in 2004 and continues to participate. There is no clear indication that the college has implemented other grant support efforts.

These data demonstrates that College A is doing a better job than the other colleges in its effort to initiate and implement grant supported programs (Table 4.58).

Table 4.58: Grant Supported Programs- Ranking of Colleges by Response Mean Score

Ranking Level		**1**	**2**	**3**	**4**	
College		College A	College C	College B	College D	**Response Mean Score by Indicator**
1	The institution utilizes grant funds to enhance and expand programs and services that serve developmental education students...Achieving the Dream	3.50	3.80	3.20	3.80	**3.58**
2	...Bridge programs	3.50	2.40	2.20	1.75	**2.46**
3	...Course redesign projects	2.00	2.00	2.20	0.75	**1.74**
4	...Title III	1.50	4.00	1.00	1.33	**1.96**
5	...Title V	3.75	1.00	4.00	2.67	**2.86**
6	...TRIO programs	3.75	0.50	1.00	2.00	**1.81**
	Average Response Mean Scores	**3.00**	**2.28**	**2.27**	**2.05**	

College A is moving towards full implementation of four grant-supported programs, with College B and C with two, and College D with one. All colleges are part of the Achieving the Dream initiative as part of the first round of colleges that began 2004.

Overall, these data demonstrates that College B is doing a better job, as compared to the other colleges, in its implementation of effective practices for developmental education students (See Table 4.59).

Table 4.59: Overall Response Mean Scores by Developmental Education Program Characteristics

	Overall Response Mean Scores			
Characteristic	College A	College B	College C	College D
Vision, Values, & Culture	3.42	3.78	2.79	2.20
The Culture of Evidence	3.24	3.56	2.53	2.28
Strategic Focus, Planning, & Resource Allocation	3.13	3.72	2.45	1.55
Leadership for Learning	3.40	3.87	2.58	2.37
The People of the College	2.82	3.78	2.75	1.82
Institutional Policies and Practices	2.23	3.13	1.87	1.93
Instructional Approaches and Practices	2.28	3.03	2.32	2.15
Student Support Practices	2.62	3.12	2.58	2.32
Grant Supported Programs	3.00	2.27	2.28	2.05
Total Score	**2.90**	**3.36**	**2.46**	**2.07**

College B had the highest overall response mean scores on eight of the nine characteristics and had the highest total score as compared to the other colleges. College A scored higher than all the colleges on the grant supported programs characteristic.

Research question 3.

Research question three set out to determine if a relationship exists between student performance in developmental mathematics and the incidence of identified effective practices in developmental education programs in the UCCD colleges. This was accomplished by a comparative analysis of findings discovered in Phase I and Phase II. The data findings from Phase I provided for the ranking of the UCCD colleges based on student performance of academic outcomes. The data findings from Phase II allowed for the comparison of response scores on each of the institutional characteristics that comprise a college's developmental education program based on the implementation of effective practices. Comparing both results, this researcher was able to determine that the colleges that received higher response scores, which equate to more characteristics that comprise an effective developmental education program, were more likely to provide an environment that is more conducive to aiding the underprepared student in becoming proficient in developmental and college-level mathematics.

The following table provides the ranking of the colleges based on the data findings discovered in Phase I and Phase II (See Table 4.60).

Table 4.60: College Ranking by Student Performance and College Effort Level by Developmental Education Program Characteristics

College Ranking	Student Performance Phase I	Implementation of Effective Practices Phase II
1	College B	College B
2	College A	College A
3	College D	College C
4	College C	College D

Based on these data, College B has outperformed its peer colleges on developmental mathematics students' performance on academic outcomes and in the implementation of effective practices to improve its developmental education programming.

Chapter Summary

The purpose of this chapter was to determine how developmental education mathematics students performed on academic outcomes and explore developmental education program characteristics at each of the UCCD colleges. This chapter provided in-depth description of the data collected and analyzed. Findings using descriptive statistics were reported. The following chapter will present the conclusions, recommendations, and implications of this study.

CHAPTER V: MAJOR FINDINGS AND RECOMMENDATIONS

Introduction

The massive numbers of students who enroll underprepared and the dismal rates of academic success place the community college between a rock and hard place. Community colleges, by their very nature as open admissions and open access institutions of higher education, serve the largest numbers of underprepared students nationwide. According to Oudenhoven (2002), "Open-door admission policies, affordable tuition, convenient locations, an emphasis on teaching and learning, and a welcoming attitude make community colleges a logical starting place for many of these [underprepared] students" (p. 37). It is for this reason that this study sought to discover if the UCCD colleges' have taken steps to address the needs of the underprepared by implementing effective practices in their developmental education programs. More specifically, the purpose of the study was to discover to what extent UCCD colleges' work towards the implementation of practices that can improve academic performance of developmental education students, and more specifically students who require remediation in mathematics.

This chapter was organized in five sections: major findings for each of the three research questions, major findings using contingency theory, and recommendations specific to the UCCD district and colleges. In addition, recommendations for further study are presented.

Research Question 1

Research question one asked: *To what extent do developmental mathematics students achieve academic success in the UCCD colleges as indicated by performance on academic outcomes?* The purpose of this question was to determine the achievement levels of developmental mathematics students based on academic outcomes at each of the UCCD colleges and identify the college whose students performed better. An additional set of four sub-questions were used to determine the outcome.

Sub-question one and two asked: *What proportion of FTIC students met the state standard in mathematics? How does this compare with the proportion of FTIC students who fell below the state standard in mathematics?* The descriptive statistics demonstrated that College C had the lowest number of FTIC students who met the state standard in all areas by 17.7%, and College B had the highest number of FTIC students who met the state standard in all areas by 29.4%. Of all the colleges, College B had a higher percentage of students enrolling as college-ready. College C had the lowest percentage of students entering college-ready.

Of the students who did not meet the state standard in all areas, College B had the highest percentage that required remediation in mathematics (88.5%), as compared to College C who had the lowest percentage (83.4%).

Sub-question three asked: *What proportion of FTIC students who fell below the state standard in mathematics and attempted developmental mathematics met the Texas Success Initiative (TSI) obligation?* Of the students who attempted developmental mathematics and met the TSI obligation in mathematics, College B had the highest

percentage of students who completed the TSI obligation from year one to year three by 27.7%, followed by College A by 21%, College D by 15.4%, and College C by 8.7%.

Finally, sub-question four asked: *What proportion of FTIC students who met the TSI obligation in mathematics through developmental education attempted a college-level mathematics course and completed with a grade of A, B, or C as compared to college-ready students?* These data demonstrated that College B had the highest percentage of students, 5.0%, who attempted a college-level mathematics course in year one, and had significant increases from year two at 21.3% to year three at 30.0%. College C had the lowest percentage of students attempt a college-level mathematics course in year one at 1.3% to 8.5% in year three. Of this student group, College B also had the highest percentage of students who successfully completed a college-level mathematics course at 78.2% in year one to 81.9% by year three. College D had the lowest success rate of students who successfully completed a college-level mathematics course at 41.0% in year one to 65.7% by year three.

The purpose of research question one and sub-questions was to rank the UCCD colleges based on student performance on academic outcomes. Underprepared students in mathematics attending College B were more likely to meet the TSI obligation in mathematics and successfully pass a college-level mathematics course than students in its peer colleges, followed by College A, College D and College C.

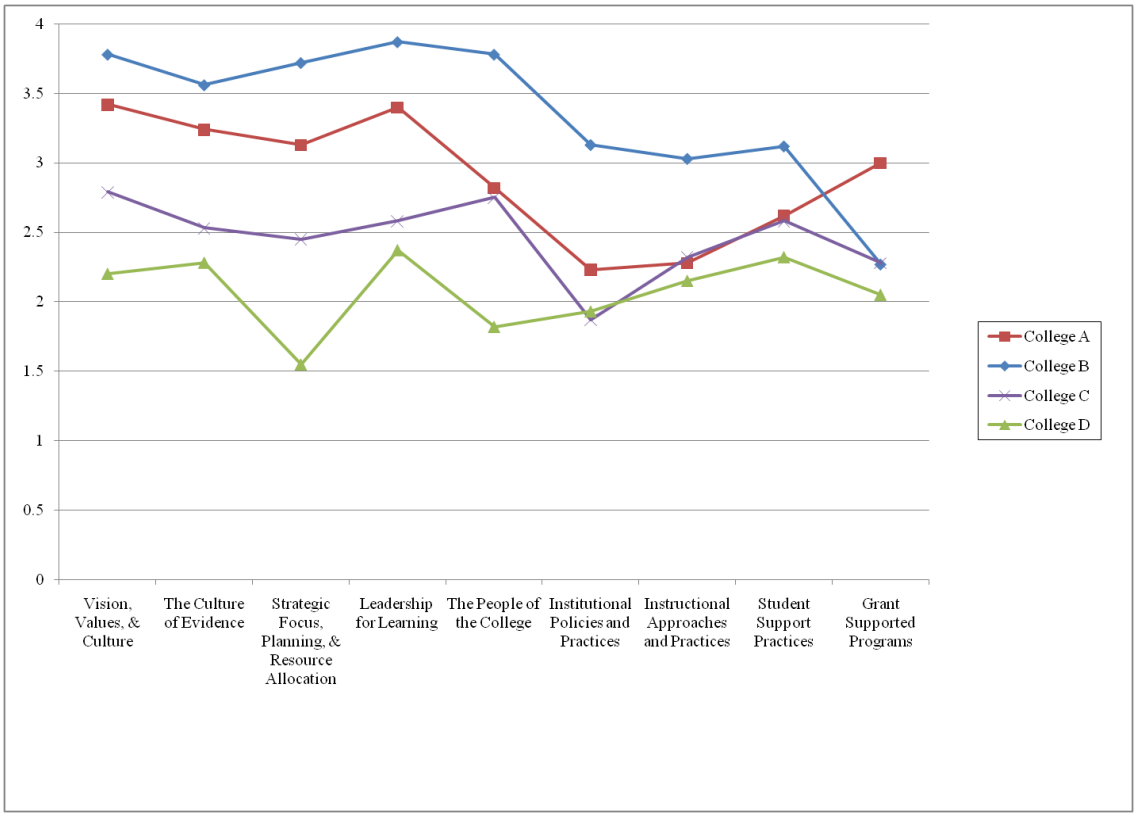
Research Question 2

Research question two asked: *To what extent do the UCCD colleges differ on the level of effort towards implementation of effective practices and what are the*

distinguishing characteristics between the UCCD developmental education programs?

The purpose of this question was to identify developmental education program characteristics and indicators that make-up effective programs and identify UCCD colleges that implement effective practices. Responses by college personnel to the Developmental Education Program Survey (DEPS) provided the data needed to answer this question (Figure 5.1).

Figure 5.1: Overall Response Mean Score by Developmental Education Program Characteristics



Of all the UCCD colleges, College B is making the strongest effort in implementing effective practices. College A is making a good effort, while the efforts of College C and College D are lacking. Of the nine characteristics, College B made a

strong effort in five: Vision, Values, and Culture; The Culture of Evidence; Strategic Focus, Planning, and Resource Allocation; Leadership for Learning; and The People of the College. College A has made a good to strong effort in four characteristics: Vision, Values, and Culture; The Culture of Evidence; Strategic Focus, Planning, and Resource Allocation; and Leadership for Learning. College C and College D were not to making significant efforts towards the implementation of effective practices in any of the characteristics.

The college making the strongest effort in the implementation of effective practices is also the college whose developmental mathematics students are more likely to meet the state standard after enrolling in developmental mathematics and pass a college-level mathematic course with a grade of C or better, as compared to developmental mathematics students attending other UCCD colleges, which is College B.

College B has made strong efforts by implementing the majority of effective practices in five characteristics: Vision, Values, and Culture; The Culture of Evidence; Strategic Focus, Planning, and Resource Allocation; Leadership for Learning; and The People of the College. These five characteristics are what distinguish College B from the other colleges.

College A also made a good to strong effort in four characteristics: Vision, Values, and Culture; The Culture of Evidence; Strategic Focus, Planning, and Resource Allocation; and Leadership for Learning. These four characteristics are similar to the characteristics of College B, but are missing the most critical characteristic, which is The

People of the College. It is important to note that College A was ranked second student performance on academic outcomes.

Research Question 3

Research question three asked: *What is the relationship between student performance in developmental mathematics and the incidence of identified effective practices in developmental education programs in the UCCD colleges?* After a comparative analysis of findings discovered in Phase I and Phase II, it can be concluded that a relationship does exist between the implementation of effective practices in developmental education programs and the academic performance of developmental mathematics students. Colleges that made good to strong efforts in the implementation of effective practices were more likely to have developmental mathematics students achieve academic outcomes at higher rates. Colleges that made low to moderate efforts in the implementation of effective practices were more likely to have developmental mathematics students achieve academic outcomes at lower rates.

Major Findings by Contingency Theory

Contingency theory helped frame this study's theoretical framework, which brings forth the notion that the best possible organizational strategy for effective institutions is to recognize and adapt to internal and external forces that exist in the environment. According to Morgan (2006), "[an] organization consists of interrelated subsystems ...which need to be internally consistent and adapted to environmental conditions" (p. 56).

It is in this view that this researcher used contingency theory to explore the UCCD colleges' capability to recognize, adapt, and change to the growing need to provide effective remediation to the ever-increasing enrollment of underprepared students. Do the UCCD colleges' recognize the growing need to improve developmental education programs to serve the largest need of its incoming student population? Do the UCCD colleges' systematically achieve a good "fit" with its environment?

Environmental impact.

The UCCD colleges are facing high enrollment numbers of underprepared students with the majority requiring mathematics remediation. Each UCCD college had more than eighty-three percent of its first-time-in-college students who did not meet the state mathematics standard. More distressing are the dismal success rates faced by these students, with only 6.6% meeting the state mathematics standard in the first year at the best performing college, College B. Students have less chance for success at the other colleges with success rates of 1.4% to 3.1% of students attaining success within the first year.

The enormity of the problem would suggest that community colleges would consider its impact, and adapt and change the organizational structure to best address the challenges of improving academic outcomes for the underprepared. Ultimately, a major academic milestone for these students should be the successful completion of a college-level mathematics course, but the data shows otherwise.

Contingency theory proposes that environmental factors dictate how organizations should be organized and structured. As internal and external forces change so should the

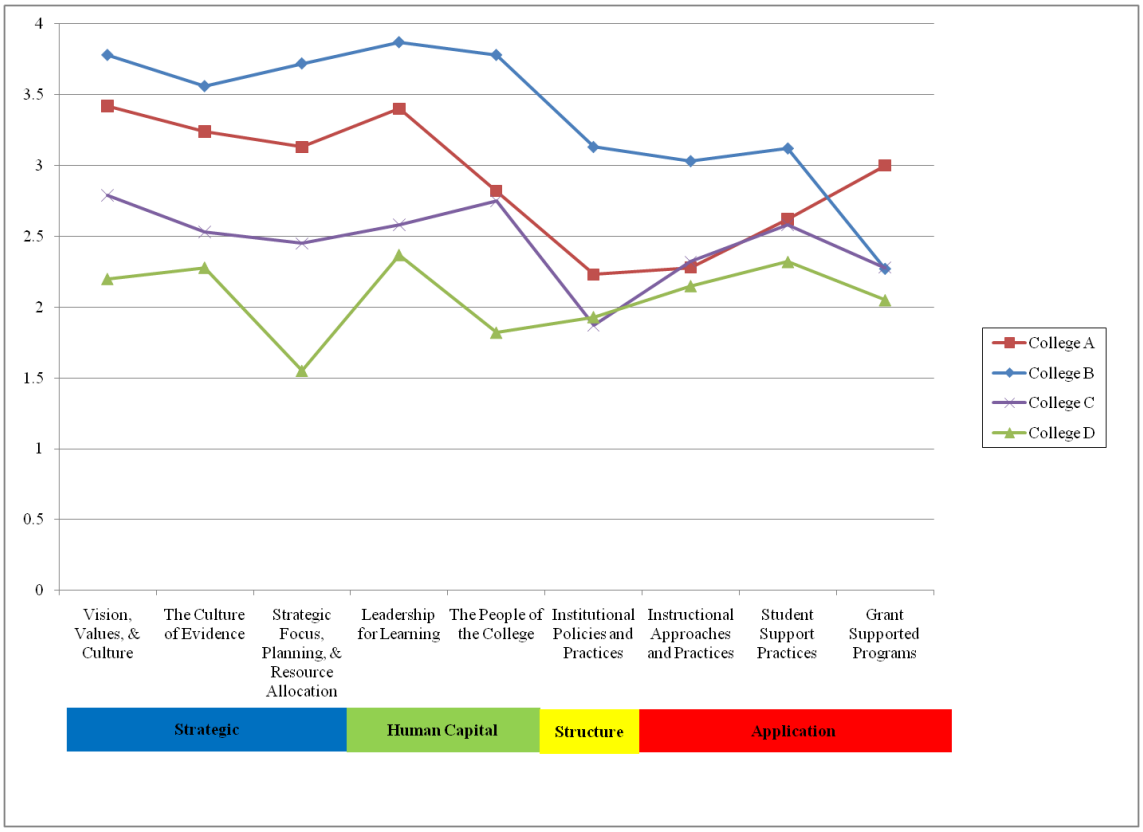
organization. Effective organizations will adapt and change to fit the needs of their environment. Considering that a high number of students are enrolling in the UCCD colleges underprepared, and low numbers of students are becoming college-ready, what have the colleges done to improve their developmental education programs and services?

Following this framework, let us first consider developmental education programs and services as one sub-system comprised of interrelated parts within the larger system- the community college. These four interrelated parts; strategic, human capital, structure, and application, are comprised of the developmental education program characteristics found in the Developmental Education Program Survey (DEPS).

The effective practices that indicate how colleges are strategic, and act with intention, in instilling the importance of developmental education are reflected in the following DEPS characteristics: Vision, Values, and Culture; The Culture of Evidence; and Strategic Focus, Planning, and Resource Allocation. How the colleges effectively utilize human capital to work towards the improvement of developmental education programs and services was determined by the colleges' effort in implementation of effective practices in the following DEPS characteristics: Leadership for Learning and The People of the College. How the colleges structurally define and legitimize developmental education was determined by the implementation of practices found in the DEPS characteristic of Institutional Policies and Practices. The effective practices that indicate the application of practices that promote the improvement of developmental education programs and services are found in the following DEPS characteristics:

Instructional Approaches and Practices, Student Support Practices, and Grant Supported Programs (See Figure 5.2).

Figure 5.2: Contingency Theory Framework and Developmental Education Program Performance by College



Following contingency theory, an effective college should recognize the changes in the environment and act accordingly. Developmental mathematic student performance on academic outcomes is an indicator of college and developmental education program effectiveness. Of the UCCD colleges, developmental mathematics students enrolled at College B had higher rates of academic success than students enrolled at the other UCCD colleges, which suggests that College B has taken different steps in its developmental education programming than the other UCCD colleges.

The findings discovered through the Developmental Education Program Survey (DEPS) suggest how effectively or ineffectively colleges adopt strategies in an attempt to address developmental education. According to the findings derived by the data presented in Chart 2, College B made significant efforts in implementing effective practices in its developmental education programming. The strongest efforts are first found in human capital, second in strategic, third in structure, and last in application. Whereas, the less effective UCCD colleges followed the same sequence (human capital, strategic, structure, and application) but did so with less vigor. These findings fall neatly into Collins mantra "*first* get the get the right people on the bus (and the wrong people off the bus) *before* you figure out how to drive it" (2001, p.48). He puts forth, "The key point is that 'who' questions come before 'what' decisions---before vision, before strategy, before organization structure, before tactics" (2001, p.62). The key to a successful organization and effective developmental education programs is its people. Having highly motivated and highly trained personnel will help transform an ineffective program to an effective program with the goal of improving student performance.

Human capital.

The college's human capital is the most critical resource that college leadership has to turnaround developmental education programs from ineffective to effective. The focus of hiring and retaining highly motivated and highly trained personnel must take precedence over the college's intent on implementing large-scale strategic, structural, or application strategies for its developmental education programs. Strong efforts must be made in both *Leadership for Learning* and *The People of the College* characteristics.

Leadership alone cannot make the programmatic changes needed to improve developmental education without the buy-in and sustainable support of the college community. They know that they need community support to make change happen. Leaders of effective colleges recognize the importance of collaboration and inclusiveness among its community. They know how to build up their faculty and staff and instill leadership throughout.

Leadership in all areas of the college must actively demonstrate commitment to strengthening student learning, persistence, and attainment by recognizing the importance of hiring personnel who are motivated and committed to working with developmental education students. Effective colleges target recruitment, selection, and orientation practices in order to hire the best-qualified and motivated personnel, who want to work with developmental education students. They provide opportunities for learning and engagement among the college community through activities such as professional development, orientation, mentoring, and activities celebrating success. Effective colleges promote an atmosphere of innovation and encourage "thinking outside of the box" but also insist on self-discipline among its college community. Individuals and groups within the institution have a collective sense of responsibility for improving learning, persistence, and attainment levels of students by working collaboratively and in unison.

Strategic.

The goal of strategic endeavors is to promote a shared sense of mission, values, and vision held by individuals and groups across the college community that

developmental education is an integral and important program within the college. A shared vision and communication around access and success will serve to instill a collective sense of responsibility for improving learning, persistence, and attainment levels of students' enrolled in developmental education among individuals and groups within the institution, and will also serve to instill a sense of urgency in identifying solutions for program improvement. This process is to provide the *why* and *how* the college will move towards developmental education program improvement, and to prepare the college community for action.

Effective leadership knows that, a strong culture of evidence and acting with focus and intention are key components in building support for program change. The work to improve developmental education programs requires the use of data to guide decision-making with college leadership leading the way. Effective colleges do not fear assessing their own performance; rather they actively and continuously do so. According to Collins (2001):

> When you start with an honest and diligent effort to determine the truth of your situation, the right decisions often become self-evident. It is impossible to make good decisions without infusing the entire process with an honest confrontation of the brutal facts. (p. 88)

Building a strong culture of evidence is an indicator of the college's commitment towards improving its developmental education programming. Continuous evaluation of instruction and services is necessary to ensure that programmatic goals and objectives to improve developmental education student performance are met. Practices such as the use of peer/student evaluations to assess developmental education teaching effectiveness and

specifically assessing student performance in developmental mathematics courses identify areas that may require targeted efforts for improvement.

Effective colleges systematically analyze the environment to identify new threats and opportunities. Structured strategic plans guide the college with priority setting and fiscal allocation to support priorities. Evaluation plans systematically assess institutional effectiveness by instituting evaluations at regular intervals; evaluation activities are both formative and summative; evaluation activities use appropriate quantitative and qualitative methods; and evaluation information is shared with a variety of audiences. Effective colleges ensure these practices are continuous and disciplined but also adopt an innovative and proactive stance towards the constant search for new opportunities and evaluating existing strategies.

Structure.

Prior to implementing large-scale structural changes in relation to the placement of developmental education and instituting policies and practices, effective colleges first focus on human capital, and secondly on strategic efforts. Structure refers to the implementation of policies and practices, at the organizational level, that have implications for all students, including developmental education students.

The placement of developmental education programs in the college's organizational structure provides insight into the level of its importance. Developmental education programs in effective colleges are highly coordinated and/or in a single department, and headed by an administrative leader.

Institutional policies and practices that are structured and narrow in focus are implemented by effective colleges, which include mandatory assessment, mandatory placement, no late registration, and not allowing students to enroll in credit-bearing academic courses only if they demonstrate the skills requisite for the course. In addition, mandatory advising, requiring orientation, and requiring a study skills course are also implemented.

Application.

After the implementation of practices in human capital, strategic, and structure, focus on the application or the "how" is now feasible. Application refers to the implementation of policies, practices, and approaches that are at the program level and specific to instructional and student service units directly involved with developmental education students.

The effective college implements practices that address student learning outcomes and curriculum in developmental mathematics and mathematics by clearly defining and articulating learning outcomes, developing common criteria and rubrics, and working towards alignment of exit-level competencies in developmental mathematics with entry-level competencies in college mathematics. In addition, teaching critical skills concepts and methods in the developmental mathematics curriculum is emphasized.

Effective colleges' utilize a myriad of instructional approaches that have proven effective such cooperative learning, collaborative learning, learning communities, accelerated learning, contextual learning, mastery learning, and problem based learning. In addition, mathematics divisions/departments utilize effective techniques/strategies in

the developmental mathematics classroom such as faculty feedback on students' performance; the use of assessments for students to reflect on their learning processes and goals; the use of integrated technology and media to support student learning, and the use of frequent testing of students (at least 10 times a semester).

Academic support services are certified and staffed by highly qualified and highly motivated personnel. Developmental education students' have access to tutoring centers, math learning center, student development courses, study skills workshops, and supplemental instruction. Effective colleges' recognize the varying academic and social needs of the developmental education student and designs programs to fit their needs such as requiring intensive academic support for the weakest developmental education student group, systematically monitoring academic performance, and engaging in pre-enrollment activities.

Additionally this same recognition occurs in its student service offerings. Effective colleges' implement mentoring and support groups; provide information to about financial aid programs; require and assist students with an Individualized Education Plan. An early alert system and case management services are used monitor student academic progress and performance, and intensive services are required for the weakest developmental education student group.

The effective college also is proactive in seeking innovative and alternative resources to support its endeavors by pursing grant opportunities. The college actively participates in national and state initiatives that promote student success. Effective

colleges also pursue federal and state monies to support initiatives geared towards student and institutional improvement.

Recommendations

The UCCD district and its colleges must make an effort to improve the academic opportunities of developmental education students by implementing practices described in this study. Most importantly, the district and the colleges must recognize that the key to any organizational and programmatic success lies in its human capital. Hiring and retaining the "right people" is critical. Hiring and retaining highly motivated and highly trained personnel can help move the college in a new direction set on improving student performance.

District wide.

The vision, values, and culture.

The UCCD colleges are in varying degrees of implementation in instilling the importance of developmental education. It should come, as no surprise that the college that is doing a better job with student performance, College B, has made a strong effort in instilling the importance of developmental education in its institutional culture. The colleges, whose students had less opportunity for success, were making moderate efforts in implementation of effective practices expressing their commitment to developmental education.

Not only should colleges take the steps to stress the importance of developmental education, so must district leadership. District leadership, which includes administration and board members, provides overall direction and sets priorities. As individual colleges

function within their community, and somewhat in isolation of the broader view; it is the task of district leadership to assess external influences that may affect the district and colleges. Developmental education is not a new phenomenon and affects each college, and thus the district, on a larger scale.

The UCCD district can have a positive impact in pushing through the developmental education and student success agenda by publically committing that developmental education is needed to help solve the achievement gap and backing that commitment through strategic planning and management of personnel, resources, and fiscal allocation. The district must move beyond verbal exchanges and move towards action.

The following strategies are recommended for the district to pursue and must be done in a public forum (board meetings, public service announcements, convocation, city/business meetings/outlets, media, UCCD website, etc.): a district-wide mission and goal statement that specifically includes developmental education student success; tie developmental education with addressing the achievement gap; and encourage and promote faculty/staff who have done good work with developmental education students. In addition, build P-16 partnerships and expect colleges to do the same, include various stakeholders from the broader community in the planning and priority setting of developmental education programs; and most importantly, provide information to the stakeholders most affected, students, and their parents.

The culture of evidence.

To address the ever-increasing demand for data demonstrating evidence of student outcomes sought by federal, state, and accrediting entities, the district must expand and enhance the institutional research roles at each college and at the system level. District leadership is key in providing necessary investment and collateral to ensure long-term focus and sustainability. The most critical step for district leadership is to consistently instill the evidenced-based beliefs and assertions about "what works" and promote student learning, persistence, and attainment.

It is imperative that reliable and valid information be produced to make data-informed and evidenced based decisions. To make that happen, a highly coordinated, district level, information technology (IT) and information research (IR) area is needed to ensure consistency, but this endeavor may face formidable challenges. Recommended strategies include the undertaking of an environmental scan on the "culture of evidence" that would include the identification and assessment of the technological infrastructure; and data collection and analysis capabilities for the various data needs for federal, state, and local entities and programs (to include grant-sponsored projects). Included in the scan should be an evaluation of personnel skills and abilities, fiscal resources, as well as the climate at each of the colleges and district to discern the level of interest in investing in a strong culture of evidence. In addition, the establishment of an advisory group at the district level, and each of the colleges, comprised of IT/IR and college faculty/staff that have expertise in research and developmental education that would provide recommendations for program improvement.

Strategic focus, planning, and resource allocation.

For the colleges whose students perform better on academic outcomes, the ability to meet and communicate across and within departments is apparent. In addition, assessments/evaluations are routinely used to inform plans for improvement for developmental students. Of the colleges whose students do not perform well, the inability to meet across the table and communicate is a great impediment. In addition, the lack of using assessments/evaluation to gauge performance answers the question does "the college demonstrates its ability to stop doing things that are proven ineffective..." the answer is, how can it.

The district can be influential in moving the colleges towards effective practices in strategic focus, planning, and resource allocation by forming a developmental education advisory committee at the district level with the task to propose recommendations to the Chancellor's leadership team, and ultimately to the board members. External stakeholders (business, secondary educators), district staff (board member, IT/IR, vice-provosts), college representatives (faculty/adjunct, administration, IR/IT, students service staff), and students comprise the committee's make-up. In addition, each college with its designated board member and college leadership can form a similar committee that presents their recommendations to the district-level group.

The district has taken the steps of promoting a system-wide goal of establishing a structured tool/method for district-wide strategic planning and resource allocation, thus providing guidance and support for the colleges who have yet to implement their own structured system for strategic planning.

Leadership for learning.

Following the lead of the colleges that have taken the critical step towards instilling the importance of developmental education and actively implementing effective practices, the UCCD district can also take the most critical step by making developmental education a priority. Most recently, the district has taken the steps to have "courageous conversations" regarding the "brutal facts" on student performance in developmental education with its board of trustees other stakeholders. Next critical steps for the district are to ensure that efforts targeting developmental education have the allocation of resources it requires; that policy making is based on "what works" and evidence-based; and that data-informed decision-making occurs at all levels. Another critical step is the encouragement of innovation and "thinking outside of the box" with regard to developmental education programming by both district and college leadership.

People of the college.

Highly trained and highly motivated personnel deliver effective developmental education. Many college personnel are unaware of the diverse needs of students and more specifically the academic and support needs of the developmental education student. The district and colleges must make every effort to provide guidance, support, and resources towards devising effective strategies in institutional, instructional, and student support areas to improve services for students.

Human resources at UCCD are managed at the district level. District leadership can direct human resources to develop and maintain professional development for personnel working with developmental education students. Human resources can take the

lead in bringing together faculty/adjunct and staff, as well as developmental education experts to guide the development of the training. Professional development should include the sharing of knowledge of teaching effectiveness, strategies/approaches, and evaluation. Most importantly, the training should help build communication and collaboration to help motivate learning around developmental education.

Each academic division/department where developmental education is part should provide an orientation, as well as mentoring to new faculty and adjunct faculty members. Training should be available through the year and the district and colleges should provide fiscal resources towards these endeavors.

Three critical directives that the district must establish are as follows: 1) stress the importance of hiring qualified and committed personnel; 2) require faculty/adjuncts and staff to participate in professional developmental activities; and 3) support and encourage faculty to develop an over-arching plan to improve teaching effectiveness. The last directive can be modeled after the California's Basic Skills Initiative sponsored by the California Academic Senate that produced an extensive literature review and an evaluation tool.

Institutional policies and practices.

All the UCCD colleges report that developmental courses and services were highly coordinated but only College B is moving towards housing developmental education in a single department headed by an administrative leader. There exist differing views regarding the appropriate placement of developmental education programs. For the UCCD colleges, highly coordinated developmental education courses and services does

not appear to provide the needed structure for effectiveness. College B has taken steps to institutionalize developmental education through its integration of developmental education within the organizational structure. The key issue is to dedicate an administrative leader who is committed to improving developmental education student outcomes. The district and colleges must further explore these significant practices.

Mandatory assessment, mandatory placement, and requiring students to meet course prerequisites prior to enrollment are common practices found across the colleges. In addition, requiring orientation of developmental education students appears to be practice that is being implemented across all colleges.

Missing from the effective practices identified above that would add great value to the series of assessment, placement, and prerequisites is the full implementation of mandatory advising. The implementation of this practice varies across the colleges. In addition, practices that are not being implemented fully across colleges and received the lowest response scores among the lowest performing colleges are the elimination of late registration and requiring working students to take fewer hours. Another practice that is not being considered among all colleges, although developmental education courses are being taught online to high degree (second only to lecture), is the assessment of technology skills of students enrolled in developmental education courses. District leadership should take steps to provide support and resources to colleges, who have strong evaluation capability, to pilot the above practices.

The UCCD colleges implemented a district-wide policy that all entering students with fewer than fifteen college semester credit hours must successfully complete a

student development (SDEV) course. According to the survey responses, this practice is not fully implemented across the colleges for developmental education students. District and college leadership should explore how college personnel interpret the policy and how it affects developmental education students. A case in point, the policy stipulates that students enrolled in college "credit hours" enroll in a SDEV course, does this include student enrolled in developmental education courses that are considered non-credit hours?

District and college leadership must ensure that policies serve the purpose of its design, which requires the education of personnel who interpret and act on these directives. Continuous monitoring and evaluation is needed to ensure fair and judicious application. Public awareness efforts should occur to inform the college community of policy changes and should be clearly stated and written for easier understanding.

Instructional approaches and practices.

The implementation of effective Instructional Approaches and Practices is one the most critical components for improving student performance in developmental mathematics. District leadership should focus significant attention towards providing an environment where faculty members are encouraged to lead the effort towards instructional change. A recommendation would be to establish a district-level, faculty lead, instructional team that is comprised of college faculty from each college representing each developmental education subject area. The instructional team members should be recommended by each college academic senate and should include an adjunct faculty member from each college. This team should be provided with resources that will

allow members to commit their time and effort to this endeavor. The district and colleges should have representation by an instructional team representative on their executive leadership teams. In addition, team members should work in conjunction with human resources to develop and facilitate professional development for developmental education faculty and adjunct members.

In addition, team members will lead the efforts of alignment in curriculum and teaching with student learning outcomes; and aligning exit-level competencies in developmental mathematics, reading, and writing with entry-level competencies in corresponding college courses.

The district should also provide incentives to support developmental education faculty and adjunct that utilize effective instructional approaches, practices, and strategies in their classroom. Professional development should be required of all personnel who work with under-prepared students. In addition, faculty and adjunct who teach online developmental education courses should be required to develop a technology assessment tool to gauge if the student has access to the required computer requirements, and has the technological skill and ability.

Developmental education students at all colleges have access to a tutoring center and math learning centers. Only College B has taken the steps towards NADE or CRLA certification, which is a significant endeavor. The district should encourage that the remaining colleges take the appropriate steps to seek NADE and CRLA certification. This can provide much needed structure for the implementation of practices that can improve developmental education.

Student support practices.

The district and colleges can expand its P-16 efforts by modeling programs such as Austin Community Colleges College Connections that has graduating high school students complete a community college application and assists students with registration and testing; and The El Paso Community College, with the cooperation of the local independent school districts, provides college placement testing to all 11th graders. The district can provide support for colleges to compete for federal and state grant dollars for programs that target middle and high schools such as Upward Bound, Talent Search, and Summer Bridge. In addition, the district can utilize data to guide decision-making to target its efforts on high schools that are not effectively producing college-ready students and UCCD colleges whose under-prepared students are faring poorly on student outcomes.

The district also has the responsibility of interpreting and developing policies and procedures based on legislative mandates and directives made by the Texas Higher Education Coordinating Board (THECB). Under the Texas Administrative Code, Title 19, Part 1, Chapter 4, Subchapter C (Texas Success Initiative), Rule §4.58 (Advisement and Plan for Academic Success), institutions of higher education shall design an individual education plan for student who fail to meet the minimum passing standards. Only College B is in moderate implementation of requiring developmental education students to have an individualized education plan (IEP). The district must ensure that all colleges follow state mandates and directives.

Gant-supported programs.

All colleges are part of the Achieving the Dream initiative that began in 2004. The Achieving the Dream initiative promotes a student-centered model for institutional improvement that focuses on creating a culture of evidence where data and inquiry drive broad-based institutional efforts to improve student success. The district should take the steps to assess each college's commitment towards establishing an environment that values the "culture of evidence."

The district can assist colleges' acquisition of grant-sponsored funds to improve developmental education programs by designating a grant administrator at the district level to pursue grant opportunities, under the guidance and recommendations of each college.

Recommendations for college A.

College A should focus its efforts towards implementing effective practices in the following characteristics: The People of the College; Institutional Policies and Practices; Instructional Approaches and Practices; and Student Support Practices.

The people of the college.

The characteristic most crucial to improve developmental student success, and deserves recognition by college leadership, is The People of the College. It is critical that highly trained and high-motivated personnel work with developmental education students. This is more crucial in the hiring of faculty and adjunct members. College leadership must actively be involved in the hiring of personnel within all departments that serve developmental education students, this includes instructional and student service

areas. In addition, leadership must require that each instructional and student service department provide orientation, mentoring, and continuous professional development opportunities. By providing fiscal support, such as incentives for course-redesign projects or performance-based increases for faculty/adjuncts who improve student outcomes in high-risk courses, senior leadership can prove their commitment towards improving developmental education instruction and services.

In addition, the mathematics division/department leadership must engage faculty and adjunct members in identifying high-failure-rate courses and undertake course re-design on a routine basis. The division/department can also develop an instructional team that can promote teaching effectiveness among the faculty and adjunct members.

Institutional policies and practices.

The organizational arrangement of developmental education courses and services at College A requires a significant amount of attention. A highly coordinated system is in marginal to full implementation, and is neither housed in a single department, or retains an administrative leader. College leadership should first hire an administrative leader who is part of the executive team to coordinate programs and services. This person can evaluate the college environment and recommend if the organizational placement of developmental education programs and services.

College A is making a good effort towards the implementation of institutional policies and practices proven effective such as mandatory assessment, mandatory placement, mandatory advising, and requiring student orientation for developmental education students. In addition, the college is full implementation of only allowing

students to enroll credit-bearing courses if they demonstrate the required skills needed for the course.

College A needs to consider the implementation the following practices: remove late registration as an option, require working students to take fewer credit-bearing academic courses, and require a study skills course. Because online course instruction is the second method of course delivery for developmental mathematics, the implementation of an assessment for technology skills and computer access/capability for students can be the easiest project to initiate.

Instructional approaches and practices.

College A is making a moderate effort overall in implementing effective practices in the Instructional Approaches and Practices characteristic. In order to improve developmental education students' prospects for success, instructional approaches and practices require an overhaul. Institutional and instructional leadership must come together to formulate a strategy on how to best promote the importance of teaching effectiveness in developmental education. This is accomplished by developing instructional teams with expertise in developmental education. This team is tasked with developing common criteria and rubrics, ensuring alignment with developmental mathematics exit-level competencies and entry-level competencies, and has representation on the district-level instructional team and college executive team. This team will oversee orientation, mentoring, and professional development of its faculty and adjunct that work with developmental education students. In addition, this team will work with the district instructional team to develop and facilitate professional development

opportunities that focus on effective practices in developmental education, instructional approaches, modes of delivery, techniques/strategies, and supplemental practices.

College leadership should fully support the instructional teams' efforts through resources. In addition, serious consideration to seek NADE or CRLA certification is needed.

Student support practices.

College A needs to focus a significant amount of energy on moving towards full implementation of the majority of effective practices described within this characteristic. Only one practice is close to full implementation, which is providing information to developmental education students about financial aid programs. A recommendation for College A is to complete an environmental scan of the programs and services provided by student services for developmental education students. Similar to the instructional team model, student services should form a developmental education student service team whose primary role is to ascertain the needs of this population and devise effective strategies (such as those proposed in this study) for implementation. In addition, this team should consider building upon programs that are currently in place such as TRIO grants to target developmental education students. In addition, pre-enrollment activities are critical and can model El Paso Community College programs that provide early testing at the local high schools.

Immediate attention should be given to the student service department practice of assisting students with an individualized education plan (IEP), although it is required for

colleges to assist students with IEP's under the Texas Success Initiative, the student service area is not implementing this practice.

Recommendations for college B.

College B has established a strong foundation in its human capital and strategic focus and can pursue implementing and enhancing practices in other areas. College B should focus its efforts towards implementing effective practices in the following characteristics: Institutional Policies and Practices; Instructional Approaches and Practices; Student Support Practices; and Grant-Supported Programs.

Institutional policies and practices.

The college is making a strong effort in implementing effective practices concerning institutional policies and practices that affect its developmental education programming. One of the most significant practices is the college's steps toward housing developmental courses in a single department and retaining an administrative leader.

College B has deployed institutional policies and practices that have proven effective such as mandatory assessment, mandatory placement, no late registration, and not allowing students to enroll credit-bearing courses if they demonstrate the required skills needed for the course. Additional attention is needed to solidify the practices of mandatory advising, requiring student orientation, and developmental education student participation in a study skills course.

The practice of requiring working students to take fewer credit-bearing academic courses needs clarity due to the survey responses that indicate confusion on whether this practice is occurring at the college. Online course instruction is the second method of

course delivery for developmental mathematics and requires the implementation of an assessment for technology skills and computer access/capability of students considering and/or enrolling in this type of delivery.

Instructional approaches and practices.

The mathematics division/department is making a tremendous effort in utilizing various instructional approaches in developmental mathematics courses. This indicates that faculty members are willing to take the steps to enhance their teaching methods, which are strictly under their control.

In the area of course delivery, developmental mathematics courses are primarily delivered through lecture and online. College leadership and faculty should explore expanding the modes of delivery. Seeking federal and state grant opportunities can provide resources to attempt pilot projects, such as Bridge programs funded through the Texas Higher Education Coordinating Board.

There is indication that the mathematics division/department is utilizing effective techniques/strategies in the developmental mathematics classroom. Leadership needs to continue to encourage and support the positive efforts made by the developmental mathematics faculty by providing resources for professional development opportunities.

The use of supplemental practices outside of the classroom is being fully utilized at College B. Developmental education students' have access to a tutoring center, a math learning center, a student development course, and study skills workshops. The provision of supplemental instruction needs clarity due to the responses that indicate confusion on whether this practice is occurring at the college.

Most noteworthy is that of all the colleges at UCCD, only College B has taken the significant steps towards full implementation of attaining NADE or CRLA certification.

Student support practices.

College B is making a good effort overall in implementing effective practices in the instructional approaches and practices characteristic. The college is making a strong effort in implementing practices that serve the masses but less so, with practices that provide students with more individualized attention. College and student service leadership should consider designating highly qualified and highly motivated staff to a developmental education student service team whose primary focus is to provide intensive support services such as facilitating mentoring and support groups, financial aid counseling, and case management to developmental mathematics students. Team members will provide students with guidance in completing an individualized education plan (as recommended by TSI) and act as first responders for the early alert system.

Grant-supported programs.

College B has two initiatives: Achieving the Dream and is designated as a Hispanic Serving Institution (Title V). The college can greatly enhance its current programs by seeking grant opportunities such as the federally funded TRIO programs and state funded initiatives such as Bridge programs or course redesign projects.

Recommendations for college C.

College C should focus its efforts towards implementing effective practices in the following characteristics in order of importance: Leadership for Learning; The People of the College; Vision, Values, and Culture; The Culture of Evidence; and Strategic Focus,

Planning, and Resource Allocation. Although the college is weak in the remaining characteristics, it is imperative that the college improves in the areas identified above that have been shown to be the first steps to establishing an effective developmental education program.

Leadership for learning.

The college can focus its energy on fully integrating effective practices that comprise leadership for learning. College leadership must make developmental education a top priority. Leadership must move beyond rhetoric to actions. The use of data to guide drive decision is critical. The allocation of resources to support developmental education efforts is also crucial towards improving student outcomes. By fully implementing effective practices in resource allocation, policymaking, and the use of data- to drive decision-making, college leadership can demonstrate their commitment to strengthening student learning, persistence, and attainment of developmental education students. In addition, leadership must be innovative, "think outside of the box," and encourage the college community to do the same.

People of the college.

This characteristic is the most crucial and must be recognized by college leadership. It is critical that highly trained and high-motivated personnel are hired to work with developmental education students. This is more crucial in the hiring faculty and adjunct members. College leadership must actively be involved in the hiring of personnel within all departments that serve developmental education students, this includes instructional and student service areas. In addition, leadership must require that

each instructional and student service department provide orientation, mentoring, and continuous professional development opportunities. By providing fiscal support, such as incentives for course-redesign projects or performance-based increases for faculty/adjuncts who improve student outcomes in high-risk courses, senior leadership can prove their commitment towards improving developmental education instruction and services.

In addition, the mathematics division/department leadership must engage faculty and adjunct members in identifying high-failure-rate courses and undertake course re-design on a routine basis. The division/department can also develop an instructional team that can promote teaching effectiveness among the faculty and adjunct members.

The vision, values, and culture.

College C can focus its energy on fully integrating the following practices: development of a clearly defined mission value and vision centrally focused on developmental education; instilling a sense of urgency in seeking solutions to improve developmental education; publicly committing to equity achievement; and developing a strong culture of evidence. This must be established through efforts by college leadership. Leadership must be make developmental education an institutional priority and actively encourage and support college-wide efforts towards improving developmental education student outcomes.

A heightened sense towards collaboration is needed to improve engagement among the college and broader community in planning and priority setting of developmental education programming. This can be accomplished by including

community members, especially K-12 educational partners, on committees and projects such as the developmental education committee and P-16 group that promotes collaboration across educational sectors to work towards curricular alignment, assessment and testing at the high-school, and promote college-readiness at all grade-levels.

The culture of evidence.

The college must focus its energy on fully integrating effective practices that comprise the culture of evidence. The majority of responses report that effective practices are being partially implemented. The college administration must rigorously exam and openly discusses the academic performance of developmental education students. It is critical to include faculty on these discussions. A capable IR system is necessary to collect, analyze, and report on the critical academic measures that specifically focus on success outcomes of the developmental education student. Further, disaggregation of data must go beyond the traditional look of student characteristics, but include student background and academic preparedness. Consideration of income-level, residency/zip-code, high-school attended, academic preparedness, and college place test scores can provide crucial information that can assist in the development of the individualized education plan but also assist in P-16 projects to target geographic areas and high-schools who have a high numbers of students requiring developmental education.

The college must fully integrate the use of student and institutional assessments in order to make informed decisions on the strategic priorities for the college; how and where resources should be allocated; the curricular needs for faculty and staff development; and for the determination of program and services improvements.

These practices cannot take place without the support from college leadership. It is critical that leadership be proactive verbally as well as in action by providing the needed resources to support this endeavor. In addition, college leadership must recognize the good work occurring at other colleges and from the Achieving the Dream initiative and integrate these practices.

Strategic focus, planning, and resource allocation.

The majority of responses report that practices are in partial to full implementation, thus College C should focus its energy on fully integrating effective practices that address strategic focus, planning, and resource allocation. The full implementation of a structured tool/method such as Baldridge can act as a foundation for which the college can build upon. Evidenced-based decision-making requires routine assessment of student and institutional assessments/evaluations, and student performance, which the college needs to implement. Improved cross- and inter-departmental communication and collaboration is needed to discuss developmental education programming must occur on a routine basis. These discussions must include faculty and adjunct who teach developmental education. Most importantly, college leadership must make efforts to consistently allocate and re-allocate resources based on the priorities identified through the planning process.

Recommendations for college D.

College D should focus its efforts towards implementing effective practices in the following characteristics in order of importance: Leadership for Learning; The People of the College; Vision, Values, and Culture; The Culture of Evidence; and Strategic Focus,

Planning, and Resource Allocation. Although the college is weak in the remaining characteristics, it is imperative that the college improves in the areas identified above that have been shown to be the first steps to establishing an effective developmental education program.

Leadership for learning.

College leadership must demonstrate its commitment to strengthening student learning, persistence, and attainment by moving beyond the rhetoric to actions in resource allocation, policymaking, and utilizing data to inform decision-making. This will require strong and consistent leadership to keep the college community focused on improving programs and services for developmental education students.

College leaders must engage college groups that have an interest in improving student performance such as the academic senate, staff council/group, and the student association. College leadership should consider the formation of a developmental education task force or committee whose main goal is to devise strategies to improve institutional programs and services that serve the developmental education student. In addition, this group is tasked with raising awareness across the college and broader community. This group should also have representation on the CEOs executive team.

People of the college.

The characteristic that is the most crucial to improving student academic outcomes is people of the college. College leadership must acknowledge the importance of retaining highly trained and high-motivated personnel to work with developmental education students, and more importantly within its instructional areas. College

leadership must actively be involved in the hiring of personnel within all departments that serve developmental education students, this includes instructional and student service areas. In addition, leadership must require that each instructional and student service department provide orientation, mentoring, and continuous professional development opportunities to its personnel.

In addition, college leadership must engage the mathematics division/department leadership to devise strategies to improve teaching effectiveness. The division/department can also develop an instructional team that can promote teaching effectiveness among the faculty and adjunct members. Leadership must stress the importance of hiring highly trained and highly motivated faculty and adjuncts to teach developmental mathematics.

The vision, values, and culture.

College leadership must make developmental education a top priority. This is accomplished by including developmental education in the college's mission, values, and vision. Leadership must instill a sense of urgency towards seeking solutions to improve academic outcomes of its developmental education students. In addition, leadership must publicly commit to achieving equity and work towards developing a strong culture of evidence.

Leadership must actively engage the college and broader community in planning and priority setting of developmental education programming. This can be accomplished by including community members, especially K-12 educational partners, on committees and projects such as the developmental education committee and P-16 group that promotes collaboration across educational sectors to work towards curricular alignment,

assessment and testing at the high-school, and promote college-readiness at all grade-levels.

Collaboration and consensus building is important to instill a shared sense of responsibility across the college community but college leadership must also act with urgency in order to press for change.

The culture of evidence.

College D can focus its energy on fully integrating effective practices that comprise the culture of evidence. The college lacks clear implementation patterns of effective practices. College leadership must be active in the pursuance of evidenced-based data to guide decision-making. This is accomplished by leadership providing support to the institutional research and information systems department as demonstrated through fiscal resources, qualified personnel, and training opportunities. In addition, the college can greatly benefit from the good work being accomplished at other colleges and under the Achieving the Dream initiative. College leadership should allow an opportunity for the IR/IT department to engage with College B and district IR/IT departments in order to build a collaborative learning relationship.

College leadership must also engage faculty, adjunct, staff, and students to have a discourse on how developmental education is affecting the students, the college, and the community. These discussions can educate the college community on the importance of improving developmental education programs and services.

Strategic focus, planning, and resource allocation.

College D must focus serious attention to the implementation of effective practices in this characteristic. There is a lack of effort occurring in the implementation of effective practices. College D should focus all its energy into integrating a structured tool/method such as Baldridge that can guide the strategic and operational planning process. This will also enhance communication across departments and provide an opportunity to engage in the planning and priority-setting process for developmental education programming. Implementation of a structured tool/method must have buy-in from leadership, faculty, and staff to ensure sustainability. It is the task of college leadership to pursue this task collaboratively with the college community. In this effort, leadership must provide support and consistently allocate and re-allocated resources based on the priorities identified through the planning process.

Recommendations for Further Study

This study discovered that a relationship does exist between effective developmental education programs and developmental mathematics student performance. This study also identified characteristics and practices that are attributable to an effective college. The findings of this study are specific to the four independently accredited community colleges located an urban community college district in Texas that were studied. It is recommended that a replication of this study and a comparative analysis be conducted with other Texas multi-college districts. In addition, a replication of this study of a single-district with multi-campuses would provide insight into how developmental education programs function within a different organizational structure. This quantitative

study utilized descriptive statistical analyses. A mixed-method study may yield additional findings that may complement or challenge the findings discovered from the approach taken with this study.

Chapter Summary

The social contract between the student and the college contains "conditions" that are difficult for the student, and more often the case, college personnel to uphold. The underprepared student unknowingly agrees to enroll and pay for developmental education courses that have dismal rates of success. There is no shortage of data that show the failure of colleges and universities to do the job of effectively educating the underprepared student. Due to the high enrollment of students entering college underprepared, higher education will not be able to ignore the demands and needs of this population.

Colleges must make an effort to develop a student success agenda that includes developmental education. All parties must accept the following truths, beliefs, and assertions in order for any developmental education strategy to reach fruition:

TRUTHS

- The majority of our students require remediation.
- The brutal fact is that academic success of developmental education students in our college is dismal.
- Developmental education courses are high-risk.

BELIEFS

- We accept all students where they are.

- All developmental education students can succeed.
- We are bound as educators to improve academic success for the under-prepared student.
- Improving developmental education effectiveness makes sound fiscal sense.
- Developmental education is THE top priority.
- Rigor is expected.

ASSERTIONS

- We have the capability to improve student outcomes with the resources available.
- It is inexcusable to allow a student to pay for and enroll in high-risk courses.
- This college can be the best college to serve the under-prepared student.

The enormity of the developmental education problem would suggest that community colleges would consider its impact, and adapt and change the organizational structure to face the challenge of improving developmental education program effectiveness. This study found that colleges that adapt and change are more effective in producing positive results concerning developmental mathematics student outcomes.

There is hope that colleges can be effective in improving student performance of developmental education students. According to B. McClenney, "Nothing will make so great an impact as simply deciding to do the job...Institutions must make the choice to succeed with developmental education" (2000, p.2)

APPENDICES

Appendix A: Texas Administrative Code-Exemptions/Exceptions

Texas Administrative Code

TITLE 19	EDUCATION
PART 1	TEXAS HIGHER EDUCATION COORDINATING BOARD
CHAPTER 4	RULES APPLYING TO ALL PUBLIC INSTITUTIONS OF HIGHER EDUCATION IN TEXAS
SUBCHAPTER C	TEXAS SUCCESS INITIATIVE
RULE §4.54	**Exemptions/Exceptions**

(a) The following students shall be exempt from the requirements of this title:

(1) For a period of five (5) years from the date of testing, a student who is tested and performs at or above the following standards:

(A) ACT: composite score of 23 with a minimum of 19 on the English test and/or the mathematics test shall be exempt for those corresponding sections;

(B) Scholastic Assessment Test (SAT): a combined verbal and mathematics score of 1070 with a minimum of 500 on the verbal test and/or the mathematics test shall be exempt for those corresponding sections; or

(2) For a period of three (3) years from the date of testing, a student who is tested and performs on the Texas Assessment of Academic Skills (TAAS) with a minimum scale score of 1770 on the writing test, a Texas Learning Index (TLI) of 86 on the mathematics test and 89 on the reading test.

(3) For a period of three (3) years from the date of testing, a student who is tested and performs on the Eleventh grade exit-level Texas Assessment of Knowledge and Skills (TAKS) with a minimum scale score of 2200 on the math section and/or a minimum scale score of 2200 on the English Language Arts section with a writing subsection score of at least 3, shall be exempt from the assessment required under this title for those corresponding sections.

(4) A student who has graduated with an associate or baccalaureate degree from an institution of higher education.

(5) A student who transfers to an institution from a private or independent institution of higher education or an accredited out-of-state institution of higher education

and who has satisfactorily completed college-level coursework as determined by the receiving institution.

(6) A student who has previously attended any institution and has been determined to have met readiness standards by that institution.

(7) A student who is enrolled in a certificate program of one year or less (Level-One certificates, 42 or fewer semester credit hours or the equivalent) at a public junior college, a public technical institute, or a public state college.

(8) A student who is serving on active duty as a member of the armed forces of the United States, the Texas National Guard, or as a member of a reserve component of the armed forces of the United States and has been serving for at least three years preceding enrollment.

(9) A student who on or after August 1, 1990, was honorably discharged, retired, or released from active duty as a member of the armed forces of the United States or the Texas National Guard or service as a member of a reserve component of the armed forces of the United States.

(b) An institution may exempt a non-degree-seeking or non-certificate-seeking student.

Source Note: The provisions of this §4.54 adopted to be effective December 3, 2003, 28 TexReg 10753; amended to be effective May 17, 2004, 29 TexReg 4868; amended to be effective August 15, 2004, 29 TexReg 7971

Appendix B: Texas Administrative Code-Minimum Passing Standards

Texas Administrative Code

TITLE 19	EDUCATION
PART 1	TEXAS HIGHER EDUCATION COORDINATING BOARD
CHAPTER 4	RULES APPLYING TO ALL PUBLIC INSTITUTIONS OF HIGHER EDUCATION IN TEXAS
SUBCHAPTER C	TEXAS SUCCESS INITIATIVE
RULE §4.57	**Minimum Passing Standards**

(a) The following minimum passing standards shall be used by an institution to determine a student's readiness to enroll in freshman-level academic coursework:

(1) ASSET: Reading Skills - 41; Elementary Algebra - 38; Writing Skills (objective) - 40; and Written Essay - 6.

(2) COMPASS: Reading Skills - 81; Algebra - 39; Writing Skills (objective) - 59; and Written Essay - 6.

(3) ACCUPLACER: Reading Comprehension - 78; Elementary Algebra - 63; Sentence Skills - 80; and Written Essay - 6.

(4) THEA: Reading - 230; Mathematics - 230; Writing - 220.

(b) The minimum passing standard for the written essay portion of all tests is a score of 6. However, an essay with a score of 5 will meet this standard if the student meets the objective writing test standard.

(c) An institution may require higher passing standards.

Source Note: The provisions of this §4.57 adopted to be effective December 3, 2003, 28 TexReg 10753

Appendix C: Developmental Education Program Survey-Developmental Mathematics Specific

Developmental Education Program Survey

1. Developmental Education Program Survey-Mathematics Specific

Dear Responder:

Thank you for taking the time to complete this survey. This survey will collect data regarding developmental education programs in an urban community college district.

The purpose of this survey is to explore developmental education programs and more specifically developmental mathematics, since the majority of students in developmental education require remediation in mathematics.

The names of colleges will not be used in this study and your responses will remain anonymous.

Instructions

Base your responses to the survey on the following response scale:

Response Scale
(Adapted from Renate Krakauer, Criteria for a Learning College, 2000)

0 No implementation. There is no evidence that this practice has been implemented in the institution.
1 Under discussion. This practice is being discussed or is in the planning stages.
2 Marginal implementation. There are isolated examples of this practice in the institution.
3 Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.
4 Full implementation. This practice has been fully implemented across the institution.

Acknowledgements

This survey incorporates items paraphrased or drawn directly from work of Byron McClenney and Kay McClenney, Community College Inventory: Focus on Student Persistence, Learning, and Attainment (2003).

2. Respondent Information

*** 1. Please enter the date.**

MM DD YYYY

Date ☐ / ☐ / ☐

*** 2. Please enter your gender.**

- ◯ Female
- ◯ Male

*** 3. Please select your college.**

- ◯ Palo Alto College
- ◯ Northwest Vista College
- ◯ St. Phillip's College
- ◯ San Antonio College

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Developmental Education Program Survey

2. There exists a shared sense of mission, values, and vision held by individuals and groups across the college community that developmental education is an important issue.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

3. In this institution, there exists a sense of urgency in identifying solutions to improve developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

4. The institution has made an explicit, public commitment to achieve equity in student learning, persistence, and attainment.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

5. In pursuit of its mission, the institution has developed a strong culture of evidence as a basis for improving developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

Developmental Education Program Survey

6. The institution promotes and supports broad engagement of the COLLEGE COMMUNITY in processes for plannning and priority-setting in its developmental education programming.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

7. The institution promotes and supports broad engagement of the BROADER COMMUNITY in processes for planning and priority setting in its developmental education programming.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

8. Individuals and groups within the institution have a collective sense of responsibility for improving learning, persistence, and attainment levels of students enrolled developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

4. The Culture of Evidence

Reflection and action typically prompted and supported by data about institutional performance and student performance (learning, persistence, and attainment) of developmental education policies, practices, and services.

Developmental Education Program Survey

Response Scale

0 No implementation. There is no evidence that this practice has been implemented in the institution.

1 Under discussion. This practice is being discussed or is in the planning stages.

2 Marginal implementation. There are isolated examples of this practice in the institution.

3 Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.

4 Full implementation. This practice has been fully implemented across the institution.

1. Institutional research and information systems provide systematic, timely, useful, and user-friendly information about learning, persistence, and attainment levels of students in developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

2. The institutional culture promotes willingness of governing board members, administrators, faculty, staff, and students to rigorously examine and openly discuss institutional performance with regard to:

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
Persistence of developmental education students	◯	◯	◯	◯	◯
Developmental education course completion	◯	◯	◯	◯	◯
Developmental education level/sequence completion	◯	◯	◯	◯	◯
Developmental education student performance in subsequent gatekeeper courses	◯	◯	◯	◯	◯
Developmental education student attainment of certificate, degrees, and/or transfer	◯	◯	◯	◯	◯

Developmental Education Program Survey

3. The institution is committed to cohort tracking of entering students to determine rates of learning, persistence, and attainment and to identify areas for improvement in developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

4. The institution regularly collects, analyzes, and reports data pertaining to the following:

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
Successful completion of remedial/developmental courses (C or better)	◯	◯	◯	◯	◯
Successful completion of remedial/developmental levels/sequence	◯	◯	◯	◯	◯
Successful completion of gatekeeper mathematics courses (C or better)	◯	◯	◯	◯	◯
Student persistence/re-enrollment from one term to the next	◯	◯	◯	◯	◯
Student persistence/re-enrollment from one year to the next	◯	◯	◯	◯	◯
Completion of certificates and/or degrees	◯	◯	◯	◯	◯
Transfer rates	◯	◯	◯	◯	◯
Academic performance comparisons between student groups (developmental education and college-ready)	◯	◯	◯	◯	◯

Developmental Education Institutional Survey

*** 5. Data depicting student persistence, learning, and attainment are routinely disaggregated and reported by student characteristics including:**

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
gender	◯	◯	◯	◯	◯
race/ethnicity	◯	◯	◯	◯	◯
income level	◯	◯	◯	◯	◯
full-time/part-time status	◯	◯	◯	◯	◯
residency code/zip code	◯	◯	◯	◯	◯
high school attended	◯	◯	◯	◯	◯
academic preparedness (GPA, TAKS, coursework)	◯	◯	◯	◯	◯
college placement tests (THEA, Accuplacer, etc.)	◯	◯	◯	◯	◯

*** 6. The institution regularly assesses its performance and progress in implementing educational practices which evidence shows will contribute to higher rates of learning, persistence, and attainment for students in developmental education.**

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

*** 7. The results of student and institutional assessments are used routinely to inform institutional decisions regarding:**

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
strategic priorities	◯	◯	◯	◯	◯
resource allocation	◯	◯	◯	◯	◯
faculty and staff development	◯	◯	◯	◯	◯
improvements in programs and services for learners	◯	◯	◯	◯	◯

*** 8. Beliefs and assertions about "what works" in promoting student learning, persistence, and attainment are evidenced-based.**

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

Developmental Education Program Survey

5. Strategic Focus, Planning, and Resource Allocation

Fully integrated processes for institutional evaluation, planning, and resource allocation.

Response Scale

0 No implementation. There is no evidence that this practice has been implemented in the institution.

1 Under discussion. This practice is being discussed or is in the planning stages.

2 Marginal implementation. There are isolated examples of this practice in the institution.

3 Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.

4 Full implementation. This practice has been fully implemented across the institution.

1. The institution has a strategic plan that clearly includes developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

2. The strategic plan is used to guide operational planning for each fiscal year.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

3. The college utilizes a structured tool/method in its strategic planning such as TQM, Baldridge, etc.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

Developmental Education Program Survey

5. Strategic Focus, Planning, and Resource Allocation

Fully integrated processes for institutional evaluation, planning, and resource allocation.

Response Scale

0 No implementation. There is no evidence that this practice has been implemented in the institution.

1 Under discussion. This practice is being discussed or is in the planning stages.

2 Marginal implementation. There are isolated examples of this practice in the institution.

3 Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.

4 Full implementation. This practice has been fully implemented across the institution.

1. The institution has a strategic plan that clearly includes developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

2. The strategic plan is used to guide operational planning for each fiscal year.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

3. The college utilizes a structured tool/method in its strategic planning such as TQM, Baldridge, etc.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

4. The college demonstrates its ability to stop doing things that are proven ineffective with regard to learning, persistence, and attainment of students enrolled in developmental education.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

5. The results of student and institutional assessments/evaluations are used routinely to inform plans for improvement in developmental education programs and services.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

6. Student performance in developmental education subject areas (mathematics, reading, and writing) is routinely assessed to inform plans for improvement.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

7. Cross-departmental meetings to discuss developmental education programming are a routine occurrence.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

Developmental Education Program Survey

2. The organizational arrangement of developmental courses and services are housed in a single department.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

3. The organizational arrangement of developmental courses and services retains an administrative leader.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

4. Key institutional policies promoting focus and accountability on student learning, persistence, and attainment consistent with evidence-based research.

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
This college requires mandatory assessment of all entering students.	◯	◯	◯	◯	◯
Although repealed by the Texas Success Initiative, this college believes that mandatory placement is necessary to ensure developmental education student success.	◯	◯	◯	◯	◯
To ensure that developmental education students who are already ill-prepared do not fall further behind, late registration is not made available.	◯	◯	◯	◯	◯
Developmental education students are allowed to enroll in credit-bearing academic courses only if they demonstrate the reading, writing, or mathematics skills requisite to success in those courses.	◯	◯	◯	◯	◯
To ensure that working developmental education students successfully	◯	◯	◯	◯	◯

complete their courses, the college requires working students to take fewer hours.					
Mandatory advising is required for all developmental education students.	○	○	○	○	○
Participation in college orientation is required of all entering developmental education students.	○	○	○	○	○
Participation in a study skills course is required of all entering developmental education students.	○	○	○	○	○
Students enrolled in online developmental education courses are required to be assessed on their technology skills.	○	○	○	○	○

9. Instructional Approaches and Practices

Response Scale

0 No implementation. There is no evidence that this practice has been implemented in the institution.

1 Under discussion. This practice is being discussed or is in the planning stages.

2 Marginal implementation. There are isolated examples of this practice in the institution.

3 Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.

4 Full implementation. This practice has been fully implemented across the institution.

1. The institution has clearly defined REQUIRED student learning outcomes...

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
for each developmental mathematics course	○	○	○	○	○
for each college-level mathematics course	○	○	○	○	○

2. Faculty members have developed common criteria or rubrics that are used in ascertaining and documenting each student's level of attainment of required learning outcomes.

- ○ 0=No implementation
- ○ 1=Under discussion
- ○ 2=Marginal implementation
- ○ 3=Partial implementation
- ○ 4=Full implementation

Developmental Education Program Survey

3. Faculty design curriculum and teaching strategies to ensure alignment with required student learning outcomes.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

4. The developmental mathematics exit-level competencies are aligned with the college entry-level competencies in college mathematics.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

5. Faculty members clearly articulate learning outcomes at different levels of the developmental mathematics curriculum; consequently, prerequisites are clear and rational, and sequential levels are aligned with one another.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

6. Critical thinking concepts and methods are taught in the developmental mathematics curriculum.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

Developmental Education Program Survey

7. The mathematics division/department systematically utilizes the following instructional approaches in its developmental mathematics courses.

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
Cooperative learning	○	○	○	○	○
Collaborative learning	○	○	○	○	○
Learning communities	○	○	○	○	○
Accelerated learning	○	○	○	○	○
Contextual learning	○	○	○	○	○
Mastery learning	○	○	○	○	○
Problem based learning	○	○	○	○	○

Other (please specify)

8. The institution delivers developmental mathematics courses in a variety of ways.

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
Lecture	○	○	○	○	○
Hybrid (lecture and online)	○	○	○	○	○
Online	○	○	○	○	○
Emporium	○	○	○	○	○
Non-course based instruction	○	○	○	○	○
Self-paced instruction	○	○	○	○	○
Individualized instruction	○	○	○	○	○
Accelerated/Fast Track	○	○	○	○	○
Modules	○	○	○	○	○
Math refresher	○	○	○	○	○
Immersion	○	○	○	○	○
Bridge programs	○	○	○	○	○

Other (please specify)

Developmental Education Program Survey

9. The mathematics division/department utilizes the following techniques/strategies in its developmental mathematics courses.

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
Frequent testing of students (at least 10 times a semester)	○	○	○	○	○
Frequent provision of feedback on students' academic performace	○	○	○	○	○
Students frequently engage in self-assessment and reflection on their learning processes and goals	○	○	○	○	○
Use of integrated technology and media to support student learning	○	○	○	○	○

Other (please specify)

10. The mathematics division/department utilizes the following supplemental practices in its developmental mathematics courses.

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
Supplemental instruction	○	○	○	○	○
Tutoring	○	○	○	○	○
Math learning center	○	○	○	○	○
Student development course	○	○	○	○	○
Study skills workshops	○	○	○	○	○

Other (please specify)

11. The institution is actively engaged in the process for certification of its developmental education program and/or services.

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
National Association of Developmental Education (NADE)	○	○	○	○	○
College Reading and Learning Association (CRLA)	○	○	○	○	○

Other (please specify)

Developmental Education Program Survey

12. Intensive academic support is provided to developmental students who require 2 or more levels of developmental mathematics.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

13. Developmental education students are provided with up-to-date and accessible information regarding state, district, and college policies that will impact their college experience such as placement exam score changes, change in course offerings or structure.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

14. Developmental education students are provided with up-to-date and accessible information regarding academic support programs.

- ◯ 0=No implementation
- ◯ 1=Under discussion
- ◯ 2=Marginal implementation
- ◯ 3=Partial implementation
- ◯ 4=Full implementation

10. Student Support Practices

Response Scale

0 No implementation. There is no evidence that this practice has been implemented in the institution.

1 Under discussion. This practice is being discussed or is in the planning stages.

2 Marginal implementation. There are isolated examples of this practice in the institution.

3 Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.

4 Full implementation. This practice has been fully implemented across the institution.

Developmental Education Program Survey

Response Scale

0 No implementation. There is no evidence that this practice has been implemented in the institution.

1 Under discussion. This practice is being discussed or is in the planning stages.

2 Marginal implementation. There are isolated examples of this practice in the institution.

3 Partial implementation. This practice is being implemented in some areas of the institution in a visible and substantial way.

4 Full implementation. This practice has been fully implemented across the institution.

1. The institution utilizes grant funds to enhance and expand programs and services that serve developmental education students.

	0=No implementation	1=Under discussion	2=Marginal implementation	3=Partial implementation	4=Full implementation
Achieving the Dream	○	○	○	○	○
Bridge programs	○	○	○	○	○
Course redesign projects	○	○	○	○	○
Title III	○	○	○	○	○
Title V	○	○	○	○	○
TRIO programs	○	○	○	○	○

Other (please specify)

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REFERENCES

Alfred, R., Ewell, P, Hudgins, J. & McClenney, K. (1999). *Core indicators of effectiveness for community colleges*. Washington, D.C.: Community College Press.

Alliance for Excellence in Education (AEE). (2006). *Paying double: Inadequate high schools and community college remediation*. Issue Brief, August 2006.

American Mathematics Association of Two-Year Colleges (AMATYC). (2006). *Beyond crossroads: Implementing mathematics standards in the first two years of college*. Memphis, TN.

Astin, A.W. (1977). *Four critical years: Effects of college on beliefs, attitudes, and knowledge* San Francisco: Jossey-Bass.

Bailey, T., & Morest, V.S. (Eds.) (2006). *Defending the community college equity agenda*. Baltimore, DC: The Johns Hopkins University Press.

Barefoot, B.O. (2002). *Second national survey of first-year academic practices*. Brevard, NC: Policy Center on the First Year of College.

Bettinger, E.P. & Long, B.T. (2005). Addressing the needs of under-prepared students in higher education: Does college remediation work? Working Paper 11325. Cambridge, MA: National Bureau of Economic Research.

Biswas, R. R. (2007). *Accelerated Remedial Math Education: How Institutional Innovation and State Policy Interact*. An Achieving the Dream Policy Brief. September 2007. Jobs for the Future. Boston. MA.

Blanc, R., Debuhr, L., & Martin, D. (1983, January/February). Breaking the attrition cycle: The effect of supplemental instruction on undergraduate performance and attrition. *Journal of Higher Education, 54,* 80-90.

Boaler, J. (1998). Alternative approaches to teaching, learning and assessing mathematics. *Evaluation and Program Planning, 21,* 129-141.

Boylan, H.R., (1990). The new cycle of new majorities in higher education. In A.M. Frager (Ed), *College reading and the new majority group* (pp 3-11). Oxford, OH: College Reading Association.

Boylan, H.R., (2002). *What works: Research-based best practices in developmental education*. Boone, North Carolina: National Center of Developmental Education.

Boylan, H., Bliss, L., & Bonham, B. (1997). Program components and their relationship to student success. *Journal of Developmental Education,* 20(3), 2-8.

Boylan, H. R., & Saxon, D. P. (2006). Affirmation and discovery: Learning from successful community college developmental programs in Texas. Austin, TX: Texas Association of Community Colleges.

Burley, H., Butner, B., & Cejda, B. (2001). Dropout and stop out patterns among developmental education students in Texas community colleges. *Community College Journal of Research and Practice, 25*, 767-782.

Center for Student Success (CSS). (2007, July). *Basic skills as a foundation for student success in California community colleges*. Sacramento, CA: Author. Retrieved on January 5, 2008 from http://css.rpgroup.org/uploads/RPBasicSkills2007v2f.pdf

Chung, Carl. J. (2005). Theory, practice, and the future of developmental education. *Community College Journal of Research and Practice, 28*, 2-10.

Chickering, A.W., and Gamson, Z.F. (1991). Applying the Seven Principles for Good Practice in Undergraduate Education. New Directions for Teaching and Learning. Number 47, Fall 1991. San Francisco: Jossey-Bass Inc.

Collins, M. (2001). *Good to great*. New York, NY: HarperCollins.

Crawford, M. L. (2001). *Teaching contextually: Research, rationale, and techniques for improving student motivation and achievement in mathematics and science*. Waco, Texas: CCI Publishing, Inc. Retrieved on January 3, 2008 from http://www.cord.org/uploadedfiles/Teaching%20Contextually%20(Crawford).pdf

Davies, G. (2006). *Setting a public agenda for higher education in the states: Lessons learned from the national collaborative for higher education policy*. Denver, CO: Education Commission of the States.

Gleazer, E.J. (1968).*This is the Community College*. Boston: Houghton Mifflin.

Goldrick-Rab, S. (2007). *Promoting academic momentum at community colleges: Challenges and opportunities*. CCRC working paper #5.

Gravetter, F.J. & Wallnau, L.B. (2007). *Statistical for the behavioral sciences. (7th Ed)*. Belmont, CA: Thomson Higher Education.

Gross, M. E. (1999). *A survey of faculty attitudes toward teaching students in developmental courses at four-year institutions in the state of Maryland*. George Washington University, Washington, D.C.

Grubb, W. N. (2001). *From black box to Pandora's Box: Evaluating remedial/ developmental education*. February 2001. CCRC Brief No. 11. New York: Community College Research Center, Teachers College, Columbia University.

Hanson, E.M. (2003). *Educational Administration and Organizational Behavior*. (5th ed.). Boston: Pearson Education Inc.

Higbee, J. L., Arendale, D. R., & Lundell, D. B. (2005, Spring). Using theory and research to improve access and retention in developmental education. *New Directions for Community Colleges, 129*, 5-15.

Institution of Higher Education Policy (IHEP) (2005). The investment payoff: A 50-state analysis of the public and private benefits of higher education. Retrieved on April 27, 2008, from http://www.ihep.org/Pubs/PDF/InvestmentPayoff2005.pdf.

Johnson, D.W., Johnson, R.T., & Holubec, E.J. (1986). *Circles of learning: Cooperation in the classroom*. Edina, MN: Interaction Book Company.

Kolajo, E. (2004). From developmental education to graduation: A community college experience. *Community College Journal of Research and Practice, 28*: 365-371.

Kuh, G.D., Kinzie, J., Schuh, J.H., Whitt, E.J., & Associates. (2005). *Student success in college: Creating conditions that matter*. San Francisco, CA: Jossey-Bass.

Kuh, G.D., Kinzie, J., Buckley, J.A., Bridges, B.K., & Hayek, J.C. (2006). *What matters to student Success: A Review of the Literature*. National Postsecondary Education Cooperative.

Legislative Budget Board (LBB). (2007, January). *State formula funding for developmental education and college readiness and Texas success initiatives*. Texas State Government Effectiveness and Efficiency: Selected Issues and Recommendations. Austin, TX: LBB.

Leinbach, D. T. & Jenkins, D. (2008, January). *Using longitudinal data to increase community college student success: A guide to measuring milestone and momentum point attainment* (CCRC Research Tools No. 2) New York: Community College Research Center, Teachers College, Columbia University.

Levin, H. & Koski, W. (1998). Administrative approaches to educational productivity. *New Directions for Higher Education, 103*, 9-21.

Lopez, G.R. (2003). The (racially neutral) politics of education: A critical race theory perspective. *Educational Administration Quarterly*. *39*(1), 68-94.

Lopez, J. (2006). *The impact of demographic changes on United States higher education: 2000-2050*. Chapel Hill, NC: University of North Caroline at Chapel Hill and State Higher Education Executive Offices. Retrieved on May1, 2007 from http://www.sheeo.org/pubs/Demographics-Lopez.pdf

McCabe, R.H., (2000). *No one to waste: A Report to public decision-makers and community college leaders*. Washington D.C.: Community College Press.

McCabe, R.H., (2003). *Yes we can!: A community college guide for developing America's underprepared*. Washington D.C.: Community College Press.

McClenney, B. (2005, August). 25 Steps to effective developmental education. Retrieved on October 1, 2009 from http://www.achievingthedream.org/_images/_index03/25_Steps_to_Effective_Dev_Ed.pdf

McClenney, B. & McClenney, K. (2003). Community College Inventory. Focus on student persistence, learning, and attainment. Available from http://www.ccsse.org/publications/Community%20College%20Inventory.pdf.

Meristotis, J., & Phipps, R. (2000). Remedial education in colleges and universities. *Review of Higher Education,* 24(1): 67-85

Merriam, S. B. (2002). *Qualitative research in practice: Examples for discussion and analysis*. San Francisco: Jossey-Bass.

Mertens, D. (2005). *Research and evaluation in education and Psychology*. Thousand Oaks, CA: Sage Publications.

Moore, W. (1970). *Against the odds: The high- risk student in the community college*. San Francisco: Jossey-Bass Inc. Publishers.

Morgan, G. (2006). *Images of Organizations*. Thousand Oak, CA: Sage Publications.

National Association of Developmental Education (NADE) (2003). Mathematics Special Professional Interest Network. Edited by Thomas C. Armington. 2nd Ed. Retrieved on January 3, 2008 from http://www.etsu.edu/devstudy/spin/bp2a.pdf.

National Center for Public Policy and Higher Education. (NCPPHE) (2006). *Measuring up 2006: The national report card on higher education*. San Jose: CA.

Northcutt, N. & McCoy, D. (2004). Interactive qualitative analysis: A systems method for qualitative research. Thousand Oaks, CA: Sage.

O'Banion, T. (1995-1996). A learning college for the 21st century. *Community College Journal*. December/January.

O'Banion, T. (1997). *A learning college for the 21st century*. Westport, CT: Oryx Press.

Oudenhoven, B. (2002, Spring). Remediation at the community college: Pressing issues, uncertain solutions. *New Directions for Community Colleges, 117, 35-44*.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco: Jossey-Bass.

Payne, E., & Lyman, B. (1998). *Issues affecting the definition of developmental education*. Retrieved on August 3, 2008 from the National Association of Developmental Education website http://www.nade.net/documents/Mono96/mono96.2.pdf.

Perin, D. (2005, Spring). Institutional decision making for increasing academic preparedness in community colleges. *New Directions for Community Colleges, 129*, 27-38.

Peters, T.J. & Waterman, R.H. (1982). *In Search of Excellence*. New York: Harper & Row.

Ramirez, G. (1997). Supplemental Instruction: The long-term effect. *Journal of Developmental Education, 21* (1), 61-70.

Rettinger, D. & Palmer, T. (1996). Lessons learned from supplemental instruction: Adapting instructional methods for practical applications. *Research & Teaching in Developmental Education, 13* (1), 57-68.

Roueche, J.E. (1968). *Salvage, redirection, or custody? Remedial education in the community junior college*. Washington, D.C.: American Association of Community Colleges.

Roueche, J.E., & Baker, G.A. & Rose (2002).

Roueche, J.E., Ely, E.E. & Roueche, S.D. (2001). *In pursuit of excellence: The community college of Denver*. Washington, D.C.: Community College Press.

Roueche, J. E. & Roueche, S. D. (1993). *Between a rock and a hard place*. Washington, DC: Community College Press.

Roueche, J.E., Roueche, S.D. (1999). *High stakes, high performance: Making remedial education work*. Washington, D.C.: Community College Press.

Roueche, J. E. & Snow, J. J. (1977). *Overcoming learning problems*. San Francisco: Jossey-Bass.

Slavin, R. (1990). *Cooperative learning: Theory, research, and practice* Englewood Cliffs: Prentice-Hall.

Striplin, J. (1999). *Facilitating transfer for first-generation community college students* (ERIC ED$430627). Eric Digest, June. www.eric.ed.gov.

Texas Higher Education Coordinating Board. (2000). *Closing the Gaps: The Texas Higher Education Plan*. 2000. Texas: Texas Higher Education Coordinating Board.

Texas. Higher Education Coordinating Board (THECB). (2008). Presentation to Texas House Higher Education Committee on April, 1, 2008 by THECB Commissioner Raymund Parades.

Texas Higher Education Coordinating Board (THECB) (2009a). Developmental Education Accountability Measures Data Reports-2 Year Institutions-2005 [Data file]. Retrieved on November 17, 2009 from the Texas Higher Education Coordinating Board, http://www.txhighereddata.org/reports/performance/deved/inst.cfm?inst=778877&report_type=2&report_yr=2006

THECB (2009b). Reporting and Procedures Manual for Texas Community, Technical and State Colleges. Austin, TX: Texas Higher Education Coordinating Board.

The Perryman Group. (TPG) (2007, March). *A tale of two states-And one million jobs!* An analysis of the economic benefits of achieving the future goals of "Closing the Gaps." Waco, Texas.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*.Chicago, IL: University of Chicago Press.

Trawick, L., & Corno, L. (1995). Expanding the volitional resources of urban community college students. In P.R. Pintrich (Ed.), *Understanding self-regulated learning*. San Francisco, CA: Jossey-Bass Publishers.

Trochim, W.M.K (2001). *The research methods knowledge base*. Cincinnati, OH: Atomic Dog Publishing.

United States Census Bureau. (2008). Current Population Reports, Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2050. Retrieved on November 17, 2009 from http://www.census.gov/population/www/pop-profile/natproj.html

University of Michigan. (1998). *Diversity is necessary for academic excellence, Knefelkamp says*. Retrieved February 20, 2008, from http://www.umich.edu/~urecord/9798/Feb18_98/knef.htm

Wyatt, M. (1992). The past, present, and future need for college reading courses in the U.S. *Journal of Reading,* 36(1), 10-20.

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